TEXTILE TECHNOLOGY DIGEST

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Abstracts

ORGANIC FIBERS I

Textile fibers. Natural fibers *versus* man-made fibers. Natural fibers, A. B. D. Cassie; Man-made fibers, L. Rose. *J. Textile Inst. 37,* P556-67 (Dec. 1946).

The merits of the 2 kinds of fibers are debated. The advantages and disadvantages of both kinds of fibers, particularly with respect to their ultimate use in clothing, are compared. TTD: 4-47

Vegetable fibers I 1

Ramie. Glamour fiber. Anon. *Chem. Eng. News 25,* 744 (Mar. 10, 1947).

Two uses of ramie are briefly noted: (1) in fire hoses and textile water mains (in England), and (2) in banknotes (French) making counterfeiting difficult. TTD: 4-47

COMPARATIVE QUALITIES, YIELDS, AND GROSS RETURNS FOR LINT AND SEED FOR SOME VARIETIES OF COTTON GROWN AT TEXAS EXPERIMENT STATION, CROP OF 1946.

Bull. of USDA Production and Marketing Administration, Washington, D. C., in cooperation with Agricultural and Mechanical College of Texas; 1947; 21 pp. TTD: 4-47

REPORT ON COTTON SPINNING INDUSTRY OF GERMANY (BRIT. ZONE). Brit. Intelligence Objectives Subcommittee Report No. 1124; price 3s 2d.

Listed in Classified List No. 7 of Industrialists' Reports on Germany (Mar. 1947). TTD: 4-47

Animal fibers I 2

Compressibility of wool. Note on compressibility of wool. C. M. van Wyk. *J. Textile Inst. 37,* T285-92 (Dec. 1946).

A relation between pressure and volume for a mass of wool fibers is derived on the assumption that the compression of the mass consists solely of the bending of the fibers. It is suggested that compressibility measurements constitute a convenient method of comparing the flexural elastic properties of the fibers composing different wool samples. TTD: 4-47

Silk raising. Attempts to raise silk in America. Anon. *Rayon Textile Monthly 28,* 223 (Apr. 1947). From Service Bull. (Feb. 1, 1947) U. S. Testing Co.

Previous attempts to raise silk in the U. S. are briefly noted. The principal reason for failure has been economic, because of the tedius reeling operation (done by hand in the Orient at low cost). TTD: 4-47

GERMAN WOOL TEXTILE AND MANTLE PLUSH MANUFACTURE. Brit. Intelligence Objectives Subcommittee Report No. 810; price 6s 2d.

Listed in Classified List No. 6 of Industrialists' Reports on Germany (Feb. 1947). TTD: 4-47

MANUFACTURE OF WOOL FELT, FUR FELT AND VELOUR HOODS, HATS AND CAPELINES IN GERMANY. Brit. Intelligence Objectives Subcommittee Report No. 879; price 2s 2d.

Listed in Classified List No. 7 of Industrialists' Reports on Germany (Mar. 1947). TTD: 4-47

STORY OF WOOL. Wm. F. Leggett. Chemical Publishing Co., Inc.; 304 pp.; price $5.00.
Reviewed in *Rayon Textile Monthly 28,* 246 (Apr. 1947). TTD: 4-47

Artificial fibers I 3

GERMAN SYNTHETIC FIBERS—WET PROCESSING. Brit. Intelligence Objectives Subcommittee Report No. 1120; price 1s 7d.

Listed in Classified List No. 7 of Industrialists' Reports on Germany (Mar. 1947). TTD: 4-47

SYNTHETIC FIBER DELELOPMENTS IN GERMANY. (4 volumes) Combined Intelligence Objectives Subcommittee Report No. XXXIII—50; price 55s 8d.

Listed in Classified List No. 4 of Industrialists' Reports on Germany (Dec. 1946). TTD: 4-47

Rayons I 3 a

Brazilian rayon industry. Rayon manufacturing and development in Brazil. Paul W. Frisk. *Rayon Textile Monthly 28,* 129-31 (Mar. 1947).

A brief survey notes the existence of 3 rayon plants in the country, with a fourth plant expected to begin operations soon. The industry centers around Sao Paulo. Labor conditions are called difficult. TTD: 4-47

Fortisan. Postwar progress report on Fortisan. W. Whitehead, Celanese Corp. of Am. *Rayon Textile Monthly 28,* 71-2, 127-8 (Feb., Mar., 1947).

The development, properties and uses of Fortisan, hydrolized acetate rayon, are briefly surveyed. The Opus treatment, effecting improved dyeing affinity and quality of yarns or fabrics, is discussed. TTD: 4-47

Rayon in plastics. New uses for rayon in plastic fabrics. Anon. *Rayon Textile Monthly 28,* 222 (Apr. 1947).

Rayon in laminated plastics imparts good tensile and impact strength. TTD: 4-47

Crimped cellulose yarns. Wm. H. Charch & Wm. F. Underwood (to E. I. du Pont de Nemours & Co.). USP 2 414 800, Jan. 28, 1947.

Straight regenerated cellulose filaments with spontaneous crimping capacity are produced from dry, permanently crimped filaments by wetting and then drying under sufficient tension to remove the crimp from the filaments, or alternately, the wet gel filaments produced in a process for making permanently crimped filaments may be dried under sufficient tension to prevent the formation of the said permanent crimps. TTD: 4-47

Resin-impregnated fibers. Geo. S. Radford & Ira S. Hurd (to Rohm & Haas Co.). USP 2 415 564, Feb. 11, 1947.

Staple regenerated cellulose fibers are impregnated under pressure with a true solution of resin-forming components, such as urea, thiourea, melamine, or other carbamide type of compounds together with formaldehyde in more than an equivalent amount to form a monomethylol derivative, or phenol and formaldehyde likewise in more than equivalent amounts, or the primary addition, methylol, or condensation products of these materials, all of which give true solutions, as opposed to colloidal solutions or micellar dispersions which are incapable of penetrating the structure of regenerated cellulose fibers. The impregnated fibers may be carded as by ordinary revolving flat-top cards or roller-top cards without any objectionable amount of fly. The carded fibers produce a roving which may be readily spun and woven in the usual textile processes. The fibers may be used to make brushed, napped, and pile fabrics. TTD: 4-47

Free fall fiber. Ira V. Hitt (to E. I. du Pont de Nemours & Co.). USP 2 416 390, Feb. 25, 1947.

Novel filaments are produced by the dry or evaporative spinning process, wherein a solution comprising essentially a thermoplastic filament-forming material dissolved in a volatile organic solvent or solvent mixture is extruded in the form of fine streams into an evaporative atmosphere under such conditions that the extruded material is subject only to compressive forces until it sets in the form of self sustaining filaments. The filaments so produced are strongly and irregularly crinkled, with crimps extending in 3 dimensions. The surface irregularities produced in this way cause nearly complete loss of luster or sparkle. X-ray diffraction patterns of these fibers show a complete random distribution of the molecules. TTD: 4-47

Cellulose solution. Frank C. Hewitt & Chas. R. Cayen (to Aspinook Corp.). USP 2 416 998, Mar. 4, 1947.

To dissolve unmodified cellulose in sodium zincate solution, freezing temperature is necessary to obtain a substantial yield. The solution of hypochlorite oxycellulose can be carried on at normal temperature wth a good yield, but requires a high molar ratio of ZnO to NaOH and a sodium hydroxide concentration of 3.5*N*. Cellulose degraded by heat or alkali also requires the use of temperatures at freezing or below to obtain a satisfactory yield. By using the reducing oxycellulose, such as oxycellulose prepared by the action of H_2SO_4 or oxalic acid and sodium or potassium dichromate, complete solution can be brought about at room temperature with a concentration of NaOH so low that less than 10% of the hypochlorite oxycellulose would dissolve under similar conditions. The preferred manner of degrading the cellulose is to digest it in an aqueous solution of 0.5% H_2SO_4 and 0.5% potassium or sodium dichromate at about 100°F, depending on the degree of degradation desired. When a sol of oxycellulose is formed by this process in sufficiently high concentration, so that it tends to turn to a gel on standing, the material is still usable over an extended period because the gel is thixotropic and returns readily to the sol form on agitation. TTD: 4-47

Water-sensitive cellulose. John G. Williams & Leonard Krause (to British Celanese, Ltd.). USP 2 417 535, Mar. 18, 1947.

Water-sensitive textile materials are produced by subjecting materials made from organic esters of cellulose to treatment with an acid saponifying agent. It is preferred to use an inorganic acid, especially HCl, in aqueous solution or in aqueous alcohol, or other lower aliphatic alcohols. TTD: 4-47

PRODUCTION OF FILAMENT RAYON. J. P. BEMBERG OEHDERSTRASSE. Brit. Intelligence Objectives Subcommittee Evaluation Report No. 189; price 3d.

Listed in Classified List No. 6 of Industrialists' Reports on Germany (Feb. 1947). TTD: 4-47

MANUFACTURE OF STAPLE FLAX. ULRICH GMINDER, MANUFACTURERS "FLOCKENBAST." Brit. Intelligence Objectives Subcommittee Evaluation Report No. 188; price 3d.

Listed in Classified List No. 7 of Industrialists' Reports on Germany (Mar. 1947). TTD: 4-47

RAYON AND SYNTHETIC FIBER INDUSTRY OF JAPAN—SUPPLEMENTARY MATERIAL GATHERED FOR U. S. DEPT. OF STATE & WAR DEPT. TEXTILE MISSION TO JAPAN, JAN.-MAR. 1946. H. Wickliffe Rose. Textile Research Inst., Inc., New York 16, N. Y.; 1946; 346 pp.; price $6.00.

Reviewed in *Chem. Eng. News 25,* 1541-2 (May 26, 1947). TTD: 4-47

RAYON YARN PRODUCTION. VEREINIGTE GLANZSTOFF FABRIK A. G. Brit. Intelligence Objectives Subcommittee Evaluation Report No. 185; price 3d.

Listed in Classified List No. 6 of Industrialists' Reports on Germany (Feb. 1947). TTD: 4-47

Protein fibers I 3 b

Protein fiber. Shoe leather substitute. Anon. *Chem. Eng. News 25,* 1385 (May 12, 1947).

A protein fiber, produced by acid digestion of collagen, followed by regeneration and coagulation with a saline solution, may be obtained from the Achilles tendon of beef cattle and can be tanned and bonded for use as a shoe leather substitute. TTD: 4-47

Protein filaments. Robin H. K. Thomson & Stanley R. Swift (to Imperial Chemical Industries, Ltd.). USP 2 417 576, Mar. 18, 1947.

Spinnable caustic alkaline solutions of peanut globulin of improved keeping qualities are produced by maintaining caustic alkaline solutions at a temperature between 35° and 60°C, at least until it has attained its maximum viscosity, the said caustic alkaline solution being one made up with a concentration of caustic alkali not less than about 0.8% calculated as NaOH. TTD: 4-47

Synthetic fibers I 4

Nylon denier. Nylon denier and yardage table. Anon. *Rayon Textile Monthly 28,* 81 (Feb. 1947).

A table lists the yards per pound for various deniers from 1 to 2000. TTD: 4-47

Nylon fabrics. Today's viewpoint on fashion fabrics in nylon. Anon. *Rayon Textile Monthly 28,* 83-4, 143 (Feb., Mar., 1947).

The versatility of nylon in women's apparel is briefly discussed. TTD: 4-47

Nylon plastic zone. Initiation and propagation of the plastic zone along a tension specimen of nylon. Julius Miklowitz, Westinghouse Research Laboratories. *J. Colloid Sci. 2,* 193-215 (Feb. 1947).

A variable speed tensile-testing machine, capable of pulling nylon specimens under comparatively high rates of strain, is described. With this machine, it was found that the yield-point elongation of nylon increased almost 3 times for a 10,000-fold increase in the speed of stretching; and that there is, first, the strain in a section of the material due to the plastic yield front passing over it, and second, the strain due to the continuous action of the load on this section, as the plastic discontinuity advances to yield other sections of material. TTD: 4-47

Nylon staple. Nylon staple, its manufacture, handling, and uses. L. L. Larson, E. I. du Pont de Nemours & Co. *Rayon Textile Monthly 28,* 26-7, 77-8 (Jan., Feb., 1947).

Production of nylon staple, still on an experimental basis, will soon be on a commercial basis. Processing of nylon staple is briefly discussed and its properties outlined.
HAM TTD: 4-47

Nylon stress-strain. Stress-strain relationship of nylon under biaxial stress conditions. Julius Miklowitz, Westinghouse Research Laboratories, *J. Colloid Sci. 2,* 217-22 (Feb. 1947).

Thin nylon membrane was subjected to approximately equi-bilateral tensile stress by clamping it on a base plate of steel and inflating it by pumping air in between it and the plate. The flow point was found to be about the same as in the tension specimen (TTD: 4-47, p. 106). The essential difference is the drop in stress during the yield-point elongation of the membrane. The fiber yields under constant stress. The true stress curves of ordinary tension lie above those for equi-bilateral tension. TTD: 4-47

Vinyl yarn. Carbide & Carbon Corp. produce new type vinyl yarn. Anon. *Rayon Textile Monthly 28,* 478 (Apr. 1947).

Vinyon yarn, type N, is a new vinyl yarn, an outstanding property of which is its dimensional stability. Production will be on pilot plant scale by fall, and possibilities of low-cost basic production are thought to exist.
HAM TTD: 4-47

Vinyon. Am. Viscose Corp. achievements in development of Vinyon yarns. Anon. *Rayon Textile Monthly 28,* 179 (Apr. 1947).

The development of Vinyon over the past 9 years is briefly reviewed. TTD: 4-47

Acrylonitrile. Gaetano F. D'Alelio (to Prophylactic Brush Co.). USP 2 417 294, Mar. 11, 1947.

It is common practice in the manufacture of sheets, filaments, and fibers to dissolve the polymer in a suitable solvent and cast or extrude a concentrated solution of the polymer to the desired form. This process requires a high degree of solubility in the polymer. It is possible to eliminate most of the difficulties of the solution method by utilizing gels of these copolymers. The method is particularly advantageous in the manufacture of fibers, monofils, and sheets. Nitrohydrocarbons were found to be the most suitable liquids for use in forming the gel. The fibers and smaller articles produced according to this invention may be woven into highly insoluble and chemically resistant cloth for use in filter cloths and handling chemicals and the like. They may also be used for textiles, *e.g.*, cloth, hosiery, articles of clothing, etc. In the form of sheets, they may be used as protective coatings, awnings, raincoats, shower curtains, aprons, hospital bed sheeting, containers for hydrocarbon oils, gasoline, kerosene, vasoline, ointments, etc. TTD: 4-47

Fiber processing I 6

Sericeous fibers. Thos. C. Whitner (to Chemical Laboratories, Inc.). USP 2 417 388-9, Mar. 11, 1947.

An aqueous solution of an alkylolamine copper complex containing a small amount of alkali metal hydroxide dissolves silk fibers but not cellulose fibers. This solution is used to impregnate cellulose fibers with sericeous material. The fibers are then washed with dilute acid to remove the alkylolamine copper complex and the alkali. The product has some of the properties of silk. These sericeous fibers are treated with a saturated water-soluble aldehyde, a treatment which increases the capacity of the fibers to absorb dyes from solution and reduces the stiffness. TTD: 4-47

INORGANIC FIBERS II

Coated glass fabric. Resin-coated glass-silk fabric. Anon. *Chem. Eng. News 25,* 1693 (June 9, 1947).

A new fabric (Fibreglass, Ltd.) of great strength and resistant to water, acid, fire, and insects, is briefly noted as having a possible use in wall paper, furnishing, housing, and transport. TTD: 4-47

Dyeing Fiberglas. Dyeing Fiberglas yarns. Anon. *Chem. Eng. News 25,* 1619 (June 2, 1947).

Dyeing Fiberglas yarns is aided by coating the filaments as they are formed with a thin protein film. TTD: 4-47

Fiberglas mattress. Fiberglas mattress for hospital incubators. Anon. *Rayon Textile Monthly 28,* 100 (Feb. 1947).

A mattress containing no allergy-producing substances consists of a Fiberglas cloth cover and a filler of superfine Fiberglas fibers. TTD: 4-47

Glass fabric. Glass fabrics for plastics. Anon. *Chem. Eng. News 25,* 1619 (June 2, 1947).

A brief note on Modigliani (Wilmington Chemical Corp.) flexible glass fabric, a bonded, unwoven glass fiber fabric, a superthin form of which is available in the range of 2.5 mils thickness. TTD: 4-47

Glass fiber. Glass fiber yarns and fabrics. Anon. *J. Textile Inst. 37,* P529-30 (Nov. 1946).

A lecture (by A. M. Robertson, Fibreglass, Ltd.) is briefly summarized, being a general survey of the physical properties and uses. TTD: 4-47

German Asbestos Textile, Jointing, and Friction Lining Industries. Brit. Intelligence Objectives Subcommittee Report No. 701; price 3s 2d.

Listed in Classified List No. 6 of Industrialists' Reports on Germany (Feb. 1947). TTD: 4-47

FIBER TO YARN III

Carding nylon. Carding nylon staple. John L. Beacon. *Rayon Textile Monthly 28,* 137-9 (Mar. 1947).

In a brief discussion of nylon carding, considered the most difficult operation in processing nylon staple into yarn, it is noted that roller top cards are preferable. Card setting and operation for nylon staple are given in some detail.
HAM TTD: 4-47

Drawing nylon staple. Drawing of nylon staple slivers. Arlington Boylston. *Rayon Textile Monthly 28,* 209-12 (Apr. 1947).

Machine settings for drawing nylon staple are described in detail and illustrated.
HAM TTD: 4-47

Spinning worsted yarns. Spinning of worsted yarns on American system. R. J. McConnell, Whitin Machine Works. *Rayon Textile Monthly 28,* 135-6, 217-18 (Mar., Apr., 1947).

The ring spinning of worsted yarn is discussed on the basis of experiments with rayon staple. Machinery used to process worsted fibers (*i.e.*, roving and spinning frames) cannot be used for fibers less than 1 1/2" in length. Spinning of yarns finer than 40s is not advocated. By a comparison of 2 4000-spindle layouts (1 on the regular system and 1 on the American system) it

is estimated that a saving of $10.00 per spindle could be made per year on a 2-shift basis.
HAM TTD: 4-47

Twister electrification. Electrification of 2-for-1 twister. E. C. Gwaltney & H. J. Burnham, Saco-Lowell Shops. *Elec. Eng. 66,* 474-6 (May, 1947).

The 2-for-1 twister produces higher quality yarn in about 1/2 the time and with 1/3 the power required by conventional machines. The use of electric machinery reduces the number of rejections of finished fabrics, necessary because of dirty yarn, and increases the uniformity of twist in the yarn.
CAC TTD: 4-47

Yarn conditioner. Yarn conditioner and twist setter. Anon. *Rayon Textile Monthly 28,* 206 (Apr. 1947).

Industrial Dryer's H-W Conditioner, lined with monel metal over a welded steel frame and insulated with Fiberglas, is briefly described. TTD: 4-47

Doffer comb drive. Oscar C. Kay & Vernon Rowe. USP 2 413 832, Jan. 7, 1947.

An improved oscillating mechanism for a doffer comb in a carding machine eliminates the use of a comb box filled with oil, with a resultant saving in oil, and provides for adjusting the stroke of the doffer comb to suit various conditions. TTD: 4-47

Spinning ring traveler. Herbert J. Smith (to U. S. Ring Traveler Co.). USP 2 413 930, Jan. 7, 1947.

A traveler on a ring spinning frame has a 3-point bearing. Thread tension is eliminated, vibration reduced, and wear on the traveler is uniformly distributed.
TTD: 4-47

Jute sliver drawing. Malcolm Hain. USP 2 413 967, Jan. 7, 1947.

In drawing sliver (of jute or other fibers) an improved mechanism, consisting essentially of pairs of drawing and retaining rolls between which is a driven roll along with coactive means to control the draft, renders the sliver more accessible and permits necessary manual operations to be performed more easily. TTD: 4-47

Tow-to-top conversion period. Vernal R. Hardy (to E. I. du Pont de Nemours & Co.). USP 2 413 969, Jan. 7, 1947.

A tow of continuous filaments of nylon and the like are converted to top with better fiber distribution by subjecting the yarn to a stretch-break system wherein the drawing and retaining rolls simultaneously apply varying amounts of stretch to the filaments at different positions transversely in the tow prior to breaking. TTD: 4-47

Winding machine. Henry J. McDermott (to Am. Viscose Corp.). USP 2 414 054, Jan. 7, 1947.

On a yarn winding machine an improved head receives the foundation core and yarn package, giving a firm grip between the head and the core by providing uniform expansion of the head along the entire length of the core.
TTD: 4-47

YARN TO FABRIC IV

Yarn preparation IV 1

Slashing. Water an ingredient in sizing. S. G. Davenport, Kali Mfg. Co. *Warp Sizing Specialist* (May, 1947). Reprinted from *Rayon Warp Sizing Specialist* (Sept. 1939).

The effects of various impurities found in raw water (*e.g.,* tannic acid from dead leaves and rotted undergrowth) are briefly discussed.
LCL TTD: 4-47

Warp sizing. Sizing methods determine good warps. H. E. Wenrich. *Rayon Textile Monthly 28,* 219-21 (Apr. 1947).

The use of the Johnson sizer is described with particular reference to leasing and stretching control. TTD: 4-47

Separating warp threads. Henrich Meier (to Zellweger A. G. Apparate- und Maschinenfabriken). USP 2 413 881, Jan. 7, 1947.

A device for separating leased warp threads in weaving preparing machines is described in which, as each foremost thread is separated off, the next following thread in the series of warp threads is held back. This permits the separating off of each warp thread reliably without injury by means of only a single working element formed by the separating body in a relatively simple manner.
TTD: 4-47

Weaving IV 2

Direct beaming. Yarn control in direct beaming. H. E. Wenrich. *Rayon Textile Monthly 28,* 161-2 (Mar. 1947).

In a brief general discussion of various systems of warping, creeling, yarn tensioning, and knot tying are operations particularly considered.
HAM TTD: 4-47

Fancy loom. Thoughts on a modern fancy loom. Anon. *J. Textile Inst. 37,* P519-21 (Nov. 1946).

A lecture (by L. Armstrong, Tootal Broadhurst Lee Co., Ltd.) is summarized. The automatic loom, common in the U.S., and the nonautomatic (Lancashire type) loom are compared. It is pointed out that about twice as

many automatic looms can be tended by one weaver as nonautomatic. Fancy fabrics as well as plain can be woven on automatic looms. The shed angle (varying between 15 and 25°) should be the basis of loom design, as broken ends are the most expensive in terms of work, and the shed angle is probably the factor most affecting end breakages. TTD: 4-47

Loom drives. Development of loom drives. Anon. *J. Textile Inst. 37,* P526-8 (Nov. 1946).

A lecture (by E. Fawthrop, English Electric Co., Ltd.) is summarized. The application of individual electric motor drives to looms, in place of the long overhead line-shafts, and the use of V-belts instead of flat belts, are discussed. TTD: 4-47

Nylon weaving. Weaving of nylon goods. H. E. Wenrich. *Rayon Textile Monthly 28,* 79-81 (Feb. 1947).

In converting to nylon weaving special care should be taken in cleaning machinery and parts to assure a clean-running thread. A second, or extra, sizing of nylon warps is recommended as aiding in reducing weaving costs. Stainless steel or chrome heddles and reeds, initially more costly, will eventually prove more economical for nylon weaves. Among the problems in nylon weaving more likely to occur than others, which are briefly considered, are yarn chafing and jerk-ins. TTD: 4-47

Rayon fabric. Two beam fancy rayon fabric. P. G. Alexander. *Rayon Textile Monthly 28,* 148 (Mar. 1947).

Too heavy a bottom beam is cautioned against in weaving a 600-end fancy rayon fabric because rayon should not be stretched unduly. It is recommended that the 600-end top beam be placed on a small bottom beam and that, instead of spacing the ends, an "all-over effect" be secured. TTD: 4-47

Terry weaving. Some aspects of terry weaving. Anon. *J. Textile Inst. 37,* P530-2 (Nov. 1946).

A lecture (by O. Pomfret), briefly summarized, reviews the production of terry fabrics. TTD: 4-47

Weaving problems. Prominent producers explain difficulties facing weavers. Anon. *Rayon Textile Monthly 28,* 62-3 (Feb. 1947).

Overhauling of equipment, replacement of badly worn parts (matters neglected during the war years), and obtaining of adequate supplies of wood pulp and caustic soda are among the problems facing the weaver and producer alike that must be solved. TTD: 4-47

Absorbent woven fabric. Ross C. Whitman (to Kendall Co.). USP 2 413 934, Jan. 7, 1947.

A washable multi-ply woven fabric, highly water-absorbent and quick drying, consists essentially of exterior plies of woven, light-weight fabric with an interposed layer of heavy warp yarns interwoven, these heavy warp yarns acting as wicks. TTD: 4-47

Cotton-asbestos fabric. Boutwell H. Foster & Herbert E. Sunbury (to U. S. Rubber Co.). USP 2 413 964, Jan. 7, 1947.

A blended-fiber (cotton and asbestos) fabric, having good drying and polishing properties, is particularly for use as dish towels but also for window cleaning and silverware polishing cloths, etc. A preferred mixture contains 80 wt.% cotton and 20 wt.% asbestos fibers, the blended yarns so produced being used in both warp and weft. TTD: 4-47

Pile fabric loom. Gustav E. Schulze & Harold H. Fonda (to Nye-Wait Co., Inc.). USP 2 414 064, Jan. 7, 1947.

An improved pile wire of the stationary type and of 1-piece construction, assures uniform location of the pile tufts crosswise and lengthwise and evenness of surface. In forming pile loops, shifting of the pile yarns from 1 side of the wires to the other in alternation is facilitated. TTD: 4-47

Loom handwheel control. Victor F. Sepavich (to Crompton & Knowles Loom Works). USP 2 414 174, Jan. 14, 1947.

A clutch operated by a centrifugal governor is placed between the shafts and the handwheel in such a position that the handwheel is declutched or released when the shaft obtains full speed. This makes it possible to stop the loom more quickly and eliminates any hazard to the weaver. TTD: 4-47

Knitting IV 3

Electronic hosiery machine. New 400-needle electronic ladies' nylon hosiery machine. Anon. *Rayon Textile Monthly 28,* 203 (Apr. 1947).

A new machine that knits fine deniers (*i.e.,* 10, 15 or 20) is briefly described and illustrated with 2 photographs. TTD: 4-47

Hosiery. Postwar trends in hosiery. Nannene Gowdy. *Rayon Textile Monthly 28,* 200-2 (Apr. 1947).

Gages, construction, and colors in hosiery, particularly seamless, are considered in a brief review. TTD: 4-47

Knitting. 38th knitting arts exhibition. Anon. *Rayon Textile Monthly 28,* 193-9 (Apr. 1947).

Exhibitors at the Atlantic City exhibition (under auspices of the Natl. Assn. of Hosiery Mfrs.) are listed alphabetically. TTD: 4-47

Knitting machines. Prewar and postwar hosiery machines. Geo. A. Urlaub. *Rayon Textile Monthly 28,* 204-5 (Apr. 1947).

New 400-needle machines, producing 51 gage hosiery are briefly discussed, particularly with reference to regaging older machines (such as those producing 42, 45, and 39 gages). TTD: 4-47

Tricot knitting machine. Aveco, Inc. Tricot machine table-model available. Anon. *Rayon Textile Monthly 28,* 102 (Feb. 1947).

A table model, knitting a 21″ fabric, is useful for experimental or demonstration purposes. TTD: 4-47

Warp knitting machine. Frank J. Ford (1/3 each to Harry Whittaker & Max B. Striar). USP 2 413 819, Jan. 7, 1947.

A warp knitting machine has a single row of needles to which weft threads are fed at intervals. The jacks are reciprocated in a direction transverse to the needles. Right and left loops are formed in each wale together with the chain loops of the wefts. TTD: 4-47

Porous knitted fabric. Thos. G. Hawley, Jr. (to U. S. Rubber Co.). USP 2 413 970, Jan. 7, 1947.

A composite porous fabric, of particular use for bathing suits, is of knitted rayon or other silk-like textile fabric to which is applied an elastic network of plastic rubber composition, such as an extruded rubber latex. The elastic network is cured on the fabric in the stretched position. TTD: 4-47

Thread guide rocking mechanism. Roy C. Amidon (to Vanity Fair Mills, Inc.). USP 2 414 080, Jan. 14, 1947.

A thread guide rocking mechanism of simple and effective construction for knitting machines is described, in which the cam shaft produces the continuous oscillation of the thread guides. TTD: 4-47

Noncurling knitted fabric. Brooks Stevens, Jr. (to Lawrence Mfg. Co.). USP 2 414 424, Jan. 14, 1947.

An integral plain knit fabric of indefinite length is rib-knitted and thereby rendered noncurling because of the drawing of the yarn of the fabric to opposite faces of the fabric by the needles in the knitting of the rib-knit edge portions. The width of each side-edge rib-knit portion is merely sufficient to create noncurling edges and is very largely exceeded by the width of the plain-knit portion constituting all but the merely edge portions, so that the character or structure of the fabric is that of plain-knit fabric with merely rib-knit lateral edges. TTD: 4-47

Nonwoven cotton. New nonwoven fabric. Anon. *Chem. Eng. News 25,* 928-9 (Mar. 31, 1947).

A brief note on Chicopee's Masslinn and its projected uses in table napkins, towels, ribbons, linings, etc. TTD: 4-47

Rug. Benj. A. Greenberg (to Ben Greenberg & Bro.). USP 2 414 198, Jan. 14, 1947.

Decorative and utilitarian coverings and protective articles having a shaggy nap or pile are produced by means of a combination of pile-forming groups of loop clusters and intermittently disposed single thread tufts or clusters by means of a new type of double fringe or tape. The fringe is adapted to be cut and then applied to a woven foundation along a prescribed path, followed by the removal of selvedge thread chains to release the tuft threads and pile loops, allowing the same to intercontact those in adjacent rows to produce a designed shag pile effect. TTD: 4-47

Fabric for zippers. Sterling W. Alderfer (1/2 to Edw. D. Andrews). Re 22 831 (USP 2 373 801), Jan. 21, 1947.

An improved type of fabric, particularly for holding the zipper elements, is made by incorporating 2 cables (preferably of 2 plies) on the edge of the tape during weaving. Such tape is useful also as screening, belting, or other types of fabric requiring a strong selvedge. TTD: 4-47

Wire reinforced belt. Ralph F. & Allen R. Lindsay (to Dayton Rubber Mfg. Co.). USP 2 414 822, Jan. 28, 1947.

An endless V-type belt is reinforced with (preferably) an alloy steel wire, in spaced spiral form, which is pretreated, as by copper plating, so as to assure a firm bond between the wire and the rubber composition forming the body of the belt. TTD: 4-47

GERMAN CARPET INDUSTRY. Brit. Intelligence Objectives Subcommittee Report No. 872; price 5s 2d.

Listed in Classified List No. 6 of Industrialists' Reports on Germany (Feb. 1947). TTD: 4-47

GERMAN HATTERS FUR INDUSTRY. Brit. Intelligence Objectives Subcommittee Report No. 955; price 2s 8d.

Listed in Classified List No. 6 of Industrialists' Reports on Germany (Feb. 1947). TTD: 4-47

SURVEY OF GERMAN NARROW FABRICS INDUSTRIES INCORPORATING THE BRACES INDUSTRY. Brit. Intelligence Objectives Subcommittee Report No. 1125; price 8s 3d.

Listed in Classified List No. 7 of Industrialists' Reports on Germany (Mar. 1947). TTD: 4-47

SURVEY OF GERMAN PILE FABRIC INDUSTRY. Brit. Intelligence Objectives Subommittee Report No. 814; price 5s 2d.

Listed in Classified List No. 7 of Industrialists' Reports on Germany (Mar. 1947). TTD: 4-47

Fabric processing IV 5

Cleaning clothes. Cleaning clothes by supersonic vibrations. Anon. *Chem. Eng. News 25,* 1619 (June 2, 1947).

By the use of supersonic vibrations laundry processes are speeded up through shaking out dirt, often held to a fabric by electrical attraction. TTD: 4-47

Drier rolls. Development of jacketed-type steel drier rolls. Wm. H. Funk, Lukens Steel Co. *Rayon Textile Monthly 28,* 90-1 (Feb. 1947).

The advantages of the welded steel, single shell drier roll over the cast iron drier roll are briefly considered: reduced weight, longer bearing life through the resulting improved journal design, and increased operating efficiency generally. TTD: 4-47

Extractor. New textile extractor. Anon. *Rayon Textile Monthly 28,* 206 (Apr. 1947).

An extractor (in 40" and 48" sizes) for hosiery and knit goods is briefly described. TTD: 4-47

Laying-up machine. Knit goods laying-up machine. Anon. *Rayon Textile Monthly 28,* 207 (Apr. 1947).

A machine (CRA Electromatic Knitting Goods) that lays and centers rayon and cotton tubular knitted goods without stretch or tension, is briefly described. TTD: 4-47

Processing nylon hosiery. Paramold 29 retort for processing nylon hosiery. Anon. *Rayon Textile Monthly 28,* 207 (Apr. 1947).

A new retort having automatic electric controls, instead of hydraulic, assuring uniform results, is described and illustrated. TTD: 4-47

Textile drying. Some aspects of drying and heating of textiles. I. Moisture in fabrics. II. Use of infrared radiation. J. M. Preston & J. C. Chen. *J. Soc. Dyers Colourists 62,* 361-8 (Dec. 1946).

Fabric temperatures, rates of drying (with infrared heating), and factors affecting the absorption of infrared radiation have been investigated. Fabrics show 2 steady temperatures during drying: the lower during the period

of the constant drying rate, the higher when the fabrics are dry. A rise from the lower to the higher temperature occurs at the critical moisture content (which is given for a number of fibers). It appears that infrared drying must be justified on grounds other than those of efficiency of evaporation, possibly on such grounds as quick starting, negligible standing losses, flexibility, ease with which high temperatures are obtained, and character of finishes produced. TTD: 4-47

Tentering. Ulrich Baumann. USP 2 414 010, Jan. 7, 1947.

A tentering frame for use in fabric finishing processes has an improved means for actuating the gripping clips so that the clips, carried on a traveling endless belt, are opened gradually and without shock. By this improved moveable camming belt the speed of the machine is increased 50% so that 300 instead of 200 yd./min. may be finished. TTD: 4-47

Fabric applications IV 6

Adhesive fabric. Gelu S. Stamatoff (to E. I. du Pont de Nemours & Co.). USP 2 413 931, Jan. 7, 1947.

A pressure-sensitive adhesive fabric consists of a backing material, particularly regenerated cellulose, and a coating consisting essentially of 100 wt. parts of a resin base and 67-230 parts of a plasticizer. This adhesive fabric is adaptable to household and office use (*e.g.,* for applying to glass, to prevent shattering when broken, and as a masking tape, to protect delicate surfaces). TTD: 4-47

Rubber covered fabric. Chas. K. Novotny (to Firestone Tire & Rubber Co.). USP 2 415 023, Jan. 28, 1947.

A substantially weftless, rubber covered tire fabric is produced without the need for heavy, expensive equipment. TTD: 4-47

CHEMICAL RAW MATERIALS V

Plastics and elastomers V 1

Plastics. Use of plastics to strengthen textiles. H. Y. Jennings, Dan River Mills, Inc. *Rayon Textile Monthly 28,* 85-6 (Feb. 1947).

Since rupture of textile yarns or fabrics results either from an actual break in the fiber or from the slipping of the fibers one upon the other, the latter being much the more common, plastics can play an important part in strengthening textiles by serving to bind and compact the fibers so that they will withstand much of the slipping action. TTD: 4-47

Rubber latex fabric. Novel range of fabrics predicted with new process. Anon. *Chem. Eng. News 25,* 1620 (June 2, 1947).

A brief note on Positex, a new kind of rubber latex, in which the rubber particles instead of being negatively charged are positively charged over a range of pH 3-11. Mass production of materials, hitherto considered too delicate for looms, is expected. TTD: 4-47

Resin coating. Donald E. Edgar (to E. I. du Pont de Nemours & Co.). USP 2 413 697, Jan. 7, 1947.

A resin coating for fabrics, paper, leather, and the like that has improved toughness, flexibility, and water resistance, are of the amide-polyamide type. Example of a coating composition: 37% formaldehyde solution 450, crystalline urea 150, n-Butyl alcohol 510, hexamethylene diammonium adipate 60, toluene 75, and phthalic anhydride 6 parts. TTD: 4-47

Polyvinyl alcohol. Robt. A. Scheiderbauer (to E. I. du Pont de Nemours & Co.). USP 2 413 789, Jan. 7, 1947.

Films, tubes, and the like of polyvinyl alcohol are rendered permanently insoluble in, and insensitive to, cold water, by heating (about 1-6 hrs. at 50-90°C) in the presence of air and an aqueous solution of a strong base having a concentration of at least 15 wt.%. TTD: 4-47

Cellulose ethers. John H. Sharphouse, Philip R. Hawtin, John Downing & Walter H. Groombridge (to Brit. Celanese, Ltd.). USP 2 414 563, Jan. 21, 1947.

Cellulose ethers which yield solutions of low clarity can be considerably clarified by extraction with solvents which dissolve only part of the ether treated. It is preferred to employ a liquid which dissolves only the low clarity fractions, or a mixture of a solvent and a nonsolvent for the ether. Best results are obtained by first dissolving the ether in a solvent which dissolves it completely, then adding the nonsolvent. The precipitated ether is then extracted with a partial solvent for the ether. TTD: 4-47

Cellulose esters. Clifford I. Haney & Mervin E. Martin (to Celanese Corp. of Am.). USP 2 414 869, Jan. 28, 1947.

The color forming substances which develop yellowish or brownish tints in clear, molded cellulose acetate or other organic acid esters of cellulose when the latter are molded, may be recovered by subjecting the cellulose acetate solution to filtration after it has been ripened to the desired acetyl value, and then extracting the cellulose acetate, after it has been precipitated, washed, and dried, with an organic liquid which will dissolve the color forming substance without dissolving the cellulose acetate. TTD: 4-47

Cellulose derivatives. John B. Rust (to Montclair Research Corp.). USP 2 415 039-44, Jan. 28, 1947.

Cellulose derivatives are produced by the reaction of an alkali cellulose, such as soda cellulose or quaternary ammonium cellulose, with alpha-beta unsaturated aldehydes, alpha-beta unsaturated ketones, unsaturated ethers, beta-substituted nitriles, di-substituted carbodiimides, and alpha-beta unsaturated polycarboxylic compounds. The products are soluble in dilute alkali and the solution may be spun into fibers or precipitated in the form of films or foils in a suitable precipitating bath. They may also be used as laundryfast textile sizes. TTD: 4-47

Ethylene polymer vulcanization. Saml. L. Scott (to E. I. du Pont de Nemours & Co.). USP 2 416 069, Feb. 18, 1947.

The halogenated polymers of ethylene are cured by compounding with S, a rubber accelerator, and a group II metal oxide. The products have physical and chemical properties similar or superior to vulcanized rubber. Their pliability, resistance to solvents, nonthermoplasticity, or rubber properties make them applicable in many fields. TTD: 4-47

Vinyl chloride interpolymers. Benj. W. Howk & Henry J. Richter (to E. I. du Pont de Nemours & Co.). USP 2 416 874, Mar. 4, 1947.

An interpolymer of vinyl chloride with an ester of an ethylenedicarboxylic acid is cured by compounding with S, a rubber accelerator, and a group II metal oxide, and heating. The products are similar to those described USP 2 416 069. TTD: 4-47

Linear polymers. Richard V. Lindsey, Jr. & Saml. L. Scott (to E. I. du Pont de Nemours & Co.). USP 2 416 878, Mar. 4, 1947.

Halogen-containing linear polymers of monoethylenic vinyl and vinylidene compounds wherein the halogen is attached to an intralinear C, *i.e.,* a carbon which is a part of the linear polymeric chain, are cured by compounding with S, a rubber accelerator, and a group II metal oxide, and heating for at least 15 min. at a temperature of at least 100°C. The products are similar to those referred to in USP 2 416 069 & 2 416 874. TTD: 4-47

Polyvinyl alcohol. Carl W. Mortenson (to E. I. du Pont de Nemours & Co.). USP 2 416 880, Mar. 4, 1947.

A polyvinyl alcohol is rendered resistant to water by treating with an alpha-polyhalogenated linear polymeric

ether, *i.e.*, a linear polymeric ether having in the molecule a plurality of halogen atoms on C atoms alpha to the ether oxygens. The preferred polyhalogenated polymeric ethers are wholly aliphatic. Films, coatings or threads and the like of the desired dimensions may then be prepared from the bubble-free solution by casting or spinning methods, as required. The superiority of the alpha-polyhalogenated polymeric ethers for promoting a high degree of insolubilization of polyvinyl alcohol is best illustrated by the fact that the conventional agents used for this treatment, including dimethylolurea, formaldehyde or trimethylolmelamine, give satisfactory insolubility only after heat treatment of the dried film.
TTD: 4-47

GERMAN PLASTICS PRACTICE. John M. DeBell, Wm. C. Goggin & Walter E. Gloor. DeBell & Richardson, Inc., Springfield, Mass.; 1946; 562 pp; price $7.50.

Reviewed in *Chem. Eng. News 25,* 1470 (May 19, 1947).
TTD: 4-47

Surface-active compounds V 2

Micelle formation. Determination of the critical concentration for micelle formation in solutions of colloidal electrolytes by the spectral change of a dye. M. L. Corrin & Wm. D. Harkins, Univ. of Chicago. *J. Am. Chem. Soc. 69,* 679-83 (Mar. 1947).

Methods are described by means of which the critical concentrations for the formation of micelles in soap solutions may be quickly determined by titrating with dye solutions. The disappearance of micelles is indicated either by a sharp change in color or by a sharp reduction in fluorescence. TTD: 4-47

TECHNOLOGY OF ADHESIVES. John Delmonte. Reinhold Publishing Corp., New York; 502; price $8.00.

Reviewed in *Chem. Eng. 54,* No. 5, 301-2 (May, 1947).
TTD: 4-47

CHEMICAL PROCESSING VI

Detergent. Dyeing agent for detergent. Anon. *Chem. Eng. News 25,* 116 (Jan. 13, 1947).

Dexter Chemical's Clavanol is a nonionic synthetic detergent, available in 2 types, which, in addition to its detergent action, retards the exhaustion of direct dyes from the dyebath, thus giving a more level dyeing.
TTD: 4-47

Starch. Vulcanized starch. Anon. *Chem. Eng. News 25,* 928 (Mar. 31, 1947).

Among a number of suggested uses for a vulcanized starch (Nat'l Starch Products, Inc.), resistant to the swelling action of heat and chemicals, is that of a textile printing thickener. TTD: 4-47

Woolen finishing. Developments in woolen and worsted cloth finishing. J. C. Schofield. *J. Textile Inst. 37,* P568-75 (Dec. 1946).

Scouring, milling, and finishing processes are briefly surveyed. The need for an improved quality of product in textile finishing machines is discussed. TTD: 4-47

Textile softening. Johannes Nelles, Otto Bayer, Wilhelm Tischbein & Fritz Bachren (vested in the Attorney General of U.S.). USP 2 417 513, Mar. 18, 1947.

The linear ester polymers are obtained by condensing aliphatic dicarboxylic acids with dihydric aliphatic alcohols, at least one of the reactants containing basic N. The condensation is effected in the usual manner, *i.e.*, by heating the reactants to higher temperatures with elimination of water. The functional derivatives of the dihydric alcohols and the dibasic acids may be used. It is expedient to interrupt the condensation before the condensation products become sticky and ropy. The products thus obtained are soluble or emulsifiable in water. They are also fusible. TTD: 4-47

COLOR VII

Color. Ceremonial use of color. Bruce Brown. *Rayon Textile Monthly 28,* 233-5 (Apr. 1947).

A brief historical review of the symbolism of color (*e.g.*, in royal courts, in religion, in academic gowns, etc.).
TTD: 4-47

Fugitive tinting. Fugitive tinting of fibers and yarns. Anon. *Rayon Textile Monthly 28,* 97 (Feb. 1947).

A brief note on the use of fugitive tints for identifying fibers or yarns during subsequent processing, especially knitting or weaving. TTD: 4-47

Marking chalk. New colored marking chalk. Anon. *Rayon Textile Monthly 28,* 103 (Feb. 1947).

A textile marking chalk (Uxbridge Worsted Co.), which will not set in contact with water, steam, or chemicals, is available in 9 colors. TTD: 4-47

Textile colors. Colors for textiles. Max Bender, Interchemical Corp. *J. Chem. Education 24,* 2-10 (Jan. 1947).

Indigo, woad, log wood, madder, Tyrian purple, kermes, cochineal and other natural dyes, mordants, and other auxiliary compounds, modern colors, and pigments are discussed. TTD: 4-47

Dyeing VII 2

Dye absorption. Dye absorption by textiles. A. J. Hall. *Rayon Textile Monthly 27,* 493-7, 609-11, 668-9, *28,* 98-100, 157-9 (Sept., Nov., Dec., 1946; Feb., Mar., 1947).

Factors influencing dyeing technique, including a consideration of consumer needs, are surveyed generally. The effect of fiber and fabric properties on dye absorption are considered, and theoretical and practical considerations of the dyeing of fabrics (particularly by jig dyeing) discussed. Absorption and desorption of dyes, particularly as applied to winch dyeing, with special mention of dyeing by means of volatilized dyes, are discussed. It is emphasized that only those dyes that exhaust at the same rates should be used together. The use of wetting out, swelling, and dye dispersing agents are also considered. TTD: 4-47

German dyes. German dyes study data available. Anon. *Oil, Paint & Drug Reptr. 150,* No. 26, 44 (Dec. 23, 1946).

New dyes and dye auxiliaries developed in Germany between 1936 and 1941, described in a microfilm document of OTS are briefly noted. The document (text in German) is available at $2.75 (microfilm) or $18.00 (enlarged print). TTD: 4-47

Differential dyeing. Croyden M. Whittaker, Henry A. Thomas, Clifford C. Wilcock & Chas. P. Tattersfield (to Courtaulds, Ltd.). USP 2 415 320, Feb. 4, 1947.

By impregnating a textile fabric with a solution or suspension of nonvolatile dyes which has little or no affinity for the fabric or with resin forming compounds which are capable of altering the dyeing properties of the fabric and evaporating the impregnating liquid more rapidly from 1 portion of the fabric than from another, differential effects are obtained on the fabric. More pronounced differential effects can be obtained by applying different pressures at different parts of the fabric. TTD: 4-47

Vat dyeing. Nicholas R. Vieira (to E. I. du Pont de Nemours & Co.). USP 2 415 379, Feb. 4, 1947.

Textile fibers may be dyed with vat dyes by a continuous dyeing process by padding the vat color onto the cloth in pigment form, as in the usual pigment pad method, then passing the cloth pad, with the color, through a reducing solution at a temperature below that at which actual reduction of the dye takes place, and then immediately passing the goods into an air-free development chamber wherein the fabric is alternately subjected to the action of steam and of an alkaline reducing solution held at boiling temperature. TTD: 4-47

Direct azo dyes. Swanie S. Rossander & Chiles E. Sparks (to E. I. du Pont de Nemours & Co.). USP 2 416 547, Feb. 25, 1947.

New soluble azo dyes which are capable of dyeing cellulosic fibers, such as cotton and regenerated cellulose rayon by direct dyeing methods, the dyeings from which are capable of being improved by aftertreatment with formaldehyde, and which also have unusual brightness and light fastness as compared to dyes which are similar except that the end group or groups are azo-resorcin, are prepared by providing an amino azo compound having at least 1 aryl nucleus substituted by a primary amino group and then forming with each primary amino group, as by condensation with a halide of 3,5-di(carbomethoxyoxy)-benzoic acid or a halide of diacetyl-3,5-dihydroxybenzoic acid, a dihydroxybenzoylamino group. TTD: 4-47

Improving dyeing properties. Jas. H. MacGregor (to Courtaulds, Ltd.). USP 2 417 312, Mar. 11, 1947.

The affinity of undyed cellulosic textile material for chrome dyes applied by the metachrome or afterchrome process and for such classes of dyes as acid wool, direct cotton, solubilized vat (*i.e.,* sulfuric ester salts of the leuco vat dyes), aqueous dispersions of insoluble amino- and hydroxy-azo compounds and of insoluble amino- and acylaminoanthraquinones is improved if the material is treated prior to dyeing with an aqueous solution containing formaldehyde and a guanidine salt of an unsaturated carboxylic acid, such as an aliphatic or aromatic monobasic or dibasic acid either as such or in the form of their water-soluble condensation product, and then converting to the water-insoluble condensation product. The treatment, in addition to improving the affinity of the cellulosic material for the dyes hereinbefore mentioned, also imparts an improved, resilient, soft handle, and this improved handle persists after dyeing. TTD: 4-47

Coated fluorescent fabric. Jos. L. Switzer. USP 2 417 383, Mar. 11, 1947.

The dyes in daylight fluorescent fabrics exhibit a tendency to bleed through the overcoating. Efforts to fix the dye in the fabric, as by mordanting, laking, etc., destroyed the daylight fluorescence; and all known clear and flexible coatings were permeable to the dyes. This caused bleeding. The patentee discovered that diatomaceous earth does not affect the daylight fluorescence of the fabric and served as a barrier to the dye by forming a lake with it, of substantially the same color; and also that certain resins transmit the dyes only when interposed between surfaces having a dye absorption potential difference. These properties are utilized in

the construction of nonbleeding coated fluorescent fabrics to be used for display and signaling. TTD: 4-47

FURSKIN DRESSING AND DYEING IN GERMANY. Brit. Intelligence Objectives Subcommittee Report No. 1164; price 4s 8d.

Listed in Classified List No. 7 of Industrialists' Reports on Germany (Mar. 1947). TTD: 4-47

Printing VII 3

Printing vinyl film. Printing on vinyl film. Chester M. Robbins. *Interchem. Rev. 6,* 16-21 (Spring, 1947).

A discussion of methods of printing, printing machines, inks, engravings, and new methods of treatment. The inks used carry sufficient solvent to dissolve the film partially, leaving the deposit of pigment as part of the film surface itself. It is concluded that printing on vinyl film is here to stay because vinyl films do a better job in many specific instances than the textiles which they have replaced. TTD: 4-47

Screen printing. Robt. F. Foard. Re 22 835 (USP 2 369 290), Jan. 28, 1947.

By an improved, economical screen printing process, not requiring the use of a rotary printing machine, a continuous design may be printed on webs of cloth, utilizing an endless backing sheet. TTD: 4-47

Printing pastes. Carl W. Maynard, Jr. & Emil G. Wiest (to E. I. du Pont de Nemours & Co.). USP 2 416 187, Feb. 18, 1947.

New water-soluble diazoamino compounds which are stable in alkaline media but which split up in acid media to form diazo compounds which readily couple with azo dye coupling components in the medium are produced by reacting in an alkaline medium a suitable diazotized arylamine with an aminobenzoic acid alkylol-amide wherein the acid radical is sulfon, carbox or both. Compositions suitable for making prints on textile materials are made by incorporating the diazoamino compound and an azoic dye coupling component into a hydrous alkaline paste which contains a sufficient proportion of pasty thickening agent to enable a print to be impressed on textile fibers from a print-forming device such as a printing block or etched printing roller. TTD: 4-47

Chrome dye printing. Georges de Niederhäusern and Ernst Tschan (to Durand & Huguenin A.G.). USP 2 416 382, Feb. 25, 1947.

The fixation of mordant dyes can be performed by simple drying, without steaming, according to the following process: The mordant dye is dissolved in as little water as possible in presence of a suitable solvent, such as

ω-ω′ dihydroxydiethylsulfide, monoethylglycol and the like, while adding urea. This solution is incorporated, while stirring continuously, in a nitrocellulose thickener in one of its commercial forms. Thus, there is obtained a transparent colored mass, to which is added subsequently an aqueous solution of a chromate and an agent splitting off acid in the heat, such as ammonium sulfocyanate, ammonium sulfate, diethyltartrate and the like. The paste thus obtained is printed on the fabric and strongly dried. TTD: 4-47

Azo printing composition. Francis H. Smith & Chiles E. Sparks (to E. I. du Pont de Nemours & Co.). USP 2 416 549, Feb. 25, 1947.

Dyes at least equal in physical and chemical properties to a combination of dianisidine with the arylamides of beta-hydroxy-naphthoic acid, and which have greener shades, are prepared by coupling azotized disanisidine to an intermediate containing the anilide of beta-oxy-naphthoic acid, and beta-oxy-naphthoic acid, in a ratio of acid to anilide of 1 : 19 to 1 : 2.0. A still further greening of the shade of these colors can be produced by a reaction with alkali chromate. TTD: 4-47

TEXTILE PRINTING IN GERMANY. Brit. Intelligence Objectives Subcommittee Report No. 1088; price 4s 2d.

Listed in Classified List No. 6 of Industrialists' Reports on Germany (Feb. 1947). TTD: 4-47

Measurement and defects VII 4

Cellulose-dye complex. Cellulose dyestuff complex. III. Effect of orientation on reflection of polarized light. J. M. Preston & P. C. Tsien. *J. Soc. Dyers Colourists 62,* 368-72 (Dec. 1946).

Fiber anisotropy and the resultant dichroism of dyed fibers are shown to affect their relation between dye concentration and intensities of reflection of polarized and unpolarized light. Fiber shape and structure are also shown to influence light reflection from dyed fibers. The fiber with the simplest shape, cuprammonium rayon, shows reflected light values nearest to the values for transmitted light, the Lilienfeld value being the most divergent. TTD: 4-47

Wool dyeing. Nature of dye-chromium-fiber complex in the case of wool dyed with certain chrome mordant dyes. E. Race, F. M. Rowe & J. B. Speakman. *J. Soc. Dyers Colourists 62,* 372-83 (Dec. 1946).

By applying a technique of dyeing wool with a limited, known amount of pure dye by the onchrome, metachrome and afterchrome processes, removing excess Cr from the wool by continuous extraction with N-oxalic

acid solution at room temperature and relating the residual Cr on the fiber to the known amount of dye on the fiber, the constitutions of the dye-chromium complexes formed when wool is dyed with 3 different dyes, have been established. Results indicate that a single pure complex in which 2 mols of dye are associated with 1 atom of Cr is produced on the fiber by any of the 3 chroming methods (except by the metachrome processing in the case of one dye); but it cannot be assumed that a similar complex, or even any single pure complex, is produced in the case of all chrome mordant dyes.

TTD: 4-47

DEFINITIONS AND MEASUREMENT OF GLOSS. V. G. W. Harrison. Printing and Allied Trades Research Assn., Charter House Square, London, E. C. 1, England; 1945; 151 pp.; price 10s net.

Reviewed in *J. Sci. Instruments 24,* 138 (May, 1947).

TTD: 4-47

PROOFING VIII

Fabric stabilization. Fabric stabilization equipment and processing methods. Leonard Shapiro & Alfred N. Henschel, Alrose Chemical Co. *Rayon Textile Monthly 28,* 73-4, 145-7 (Feb., Mar., 1947).

The Definized Process (Alrose Chemical) for stabilizing rayon and mixed fiber fabrics is discussed further in more detail with the aid of photographs and a diagram of the Definizing range. (For previous mention, TTD: 12-46, p. 563.)

TTD: 4-47

Flammable fabrics. Flammable fabrics bill under advisement. Anon. *Oil, Paint & Drug Reptr. 151,* No. 10, 3 (Mar. 10, 1947).

Legislation to prohibit interstate shipment of textile fabrics of a highly flammable character is being considered. It was stated by the Cotton Textile Institute that the use of cotton might be diminished by as much as 500,000 bales if such legislation were approved.

TTD: 4-47

Water repellency. Properties of water-repellent fabrics. John W. Rowen & Domenick Gagliardi. *J. Research Nat'l Bur. Standards 38,* 103-17 (Jan. 1947).

The theory of water repellency of textile fabrics is reviewed and analyzed. Laboratory test methods for evaluating water repellency are surveyed and 4 of these methods examined in some detail: drop-penetration, contact-angle, spray-rating, and hydrostatic pressure.

TTD: 4-47

Waterproofing fabric. Alvis R. Patterson. USP 2 414 327, Jan. 14, 1947.

A water- and sunproofing composition for textiles, paper, and other fibrous materials, consists essentially of ferrous sulfate (3-30g), phosphoric acid (0.3-1g), and an alkali such as ivory soap (0.1-5g).

TTD: 4-47

Shrinkproofing wool. Maurice L. Ward (to E. I. du Pont de Nemours & Co.). USP 2 414 704, Jan. 21, 1947.

Wool or wool-containing textiles are immersed in a dilute solution of 1,3-dichloro-5,5-dimethylhydantoin at pH 1-3 in the presence of a strongly acid buffer, at temperatures from room temperature up to 166°F. It is often desirable to apply a dehalogenating agent, such as $Na_2S_2O_3$ or $NaHSO_3$, to remove any excess treating agent or active Cl. The 1,3-dichloro-5,5-dimethylhydantoin is preferred because it is easily handled, is stable in storage, and its saturated solutions contain the preferred concentration. The desired concentration can be maintained by keeping an excess of the solid in contact with the solution.

TTD: 4-47

Water-repellent fabric. Chas. A. MacKenzie (to Montclair Research Corp.). USP 2 415 017, Jan. 28, 1947.

A new quaternary ammonium compound, capable of rendering textile fibers water repellent, soft, and capable of fixing dyes, is produced by the simultaneous reaction of a N compound, such as a long-chain fatty amide, diamide, hydrazine, hydroxamic acid and similar compounds, with formaldehyde and a silicon halide. This reaction product is then reacted with a tertiary amine to produce what are presumably quaternary ammonium compounds. The textile is treated with a solution of this product, dried, and heated to 100°C to fix the proofing agent on the fabric.

TTD: 4-47

Flameproofing. Geo. W. Seymour & Geo. C. Ward (to Celanese Corp. of Am.). USP 2 415 112, Feb. 4, 1947.

Cellulose acetate or other organic derivative of cellulose textile materials may be rendered not only fireproof but nondripping as well if said textile materials are treated with a solution of urea and an ammonium salt in an aqueous-alcoholic solvent. Besides urea and an ammonium salt, the solution may contain certain swelling or penetrating agents, such as thiocyanates, ethyl lactate or thiourea. An excellent hand may be imparted to said fabrics if an alkyl-substituted diammonium phosphate is present in the aqueous or aqueous-alcoholic solution in addition to the other agents employed in the flame- and fireproofing treatment.

TTD: 4-47

Flameproofing. Geo. W. Seymour & Geo. C. Ward (to Celanese Corp. of Am.). USP 2 415 113, Feb. 4, 1947.

Cellulose acetate or organic derivatives of cellulose are treated with a solution of urea and a suitable solvent.

A satisfactory degree of flameproofing is imparted thereto without affecting the hand or draping qualities of the material. It appears that the thiourea lowers the viscosity of molten cellulose acetate to the extent that when cellulose acetate material, treated with thiourea in the above manner, comes in contact with an open flame of a sufficiently high temperature to melt the cellulose acetate, the molten cellulose acetate drips away from the flame so rapidly that the flame is unable to raise the molten cellulose acetate to its ignition temperature. Other agents, such as ammonium salts, may be used to improve the characteristics of the flameproofed material.

TTD: 4-47

Crease resistance. John Boulton (to Courtaulds, Ltd.). USP 2 416 151, Feb. 18, 1947.

Cellulosic materials with improved crease-resisting properties are produced by impregnating the material with a solution containing formaldehyde and urea or thiourea, or a water-soluble intermediate product obtained from these compounds, together with an acid catalyst consisting of a mixture of boric acid and a hydroxy aliphatic acid, such as tartaric acid and lactic acid and then heating the material to bring about the conversion of the water-soluble intermediate products into an insoluble condensation product. TTD: 4-47

Cellulose ethers. Chas. F. Goldthwait, Herbert O. Smith & Larry B. Barnes (to U. S. Secretary of Agriculture). USP 2 417 869, Mar. 25, 1947.

Cellulose hydroxy ethers which are soluble in aqueous caustic soda can also be brought into a similar thick solution by dissolving them in aqueous cuprammonium solutions of a kind and concentration which will dissolve purified cotton or wood pulp. This solution can then be applied to yarn or cloth. The presence of insoluble Cu compounds renders the goods resistant to mildew and rotting so that the fabric strength is retained under conditions where ordinary cotton would become weakened or destroyed through attack by microorganisms.

TTD: 4-47

FLAMEPROOFING OF TEXTILES. Marjorie W. Sandholzer, Nat'l Bur. of Standards Circular 455; 20 pp.; price 10¢. May be obtained from Superintendent of Documents, Government Printing Office, Washington, D. C. TTD: 4-47

MOTHPROOFING OF WOOLEN MATERIALS IN EUROPE. H. Reumuth (prepared by Werner von Bergen, OQMG). Textile Research Inst., Inc., New York 16, N. Y.; 32 pp.; 1946; price $1.50.

Reviewed in *Chem. Eng. News 25,* 122 (Jan. 13, 1947). TTD: 4-47

TESTING AND ANALYSIS IX

Physical properties IX 1

Cotton staple length. Photo-electric method for measuring staple length of cotton. E. Lord. *J. Textile Inst. 37,* T237-59 (Nov. 1946).

Since roller settings for carding and spinning are closely determined by staple length, a reliable method of measuring this quality is of importance. By the test method described a staple length determination can be made in about 10 minutes. Tests on samples of official American Standards show that the "Photo-Electric Modal staple" is closely related to the American staple. From this agreement, from the accuracy of tests made by different operators, and from the rapid rate of testing compared with the sorter diagram technique the new method is shown to be suitable for routine staple determinations in mill testing departments. TTD: 4-47

Fiber extensometer. Fiber extensometer. Anon. *Chem. Eng. News 25,* 1386 (May 12, 1947).

The load-elongation properties of single fibers may be studied with the aid of the fiber extensometer (Harris Instruments, Inc.), an instrument that produces an ink-drawn record of the load-elongation characteristics of almost any textile fiber. Slightly modified, it will also measure folding properties, especially flexibility and resilience, of lightweight fabrics, or the compressional properties of pile fabrics at very low pressures.

TTD: 4-47

Fiber length measurement. Rapid measurement of an index of fiber length. R. de Montigny & P. Zborowski, Rolland Paper Co., Ltd. *Paper Trade J. 123,* No. 19, 42-8, No. 22, 29-34 (Nov. 7, 28, 1946).

In a pulp testing method described, a dilute aqueous suspension of fibers is made to flow past a set of fixed vertical blades under standardized conditions. The fibers caught by the blades are collected and weighed, this weight providing an index of fiber lengths. Bleached sulfate pulp was studied by this method. Empirical relationships were desired which show that the bulk and clearing strength of a given pulp are simple, rectilinear functions of the fiber index; however, bursting strength and tensile strength are more complex properties. Laboratory findings are confirmed by preliminary work in mill practice. TTD: 4-47

Moisture in tire cords. Moisture transfer to and from tire cords encased in GR-S. W. Jas. Lyons, Hilda N. Ziifle, Mary L. Nelson, & Trinidad Mares, Southern Regional Research Laboratory. *India Rubber World 116,* 199-204, 207 (May, 1947).

From experiments it is shown that the rubber of the tire carcass is permeable to moisture. Under identical conditions the moisture in rayon fabrics, incorporated in rubber, could be expected to be 20-100% greater than in cotton fabrics. (*Cf.* Wakeham, *et al.*—TTD: 4-46, p. 193). TTD: 4-47

Rain tester. New rain tester. Anon. *Rayon Textile Monthly 28,* 235 (Apr. 1947).

Du Pont's rain tester for evaluating the rain resistance of water-repellent garments, is briefly described and illustrated. TTD: 4-47

Rayon yarn deniers. Many changes in rayon yarn deniers and filament numbers. H. R. Mauersberger. *Rayon Textile Monthly 28,* 132-4 (Mar. 1947).

Semi-annual revisions are given in 2 tables and briefly discussed. TTD: 4-47

Textile tester. New developments in testing equipment. Anon. *Rayon Textile Monthly 28,* 208 (Apr. 1947).

A new electronic drive (Thymotrol) to be applied to the pendulum type of textile tester, that eliminates the effect of stretch in the sample, is described and illustrated. TTD: 4-47

Viscometer. Bingham viscometer and viscosity standards. Jas. F. Swindells, Nat'l Bur. Standards. *J. Colloid Sci. 2,* 177-84 (Feb. 1947).

The technique used with the Bingham type viscometer for evaluating the viscosities of Standard Viscosity Samples at the Bureau is described. Corrections for internal head, drainage, and change of viscosity with pressure are accounted for or rendered negligible. A graphical solution of the equasion for laminar flow in capillary tubes is employed to determine the instrument constants. TTD: 4-47

Wool damage. Photo-electric method of estimating wool damage. W. L. Semple. (Appendix—W. S. M. Grieve.) *J. Textile Inst. 37,* T260-8 (Nov. 1946).

Instead of a visual method of estimating the degree of modification of wool fibers, previously described (see TTD: 1-47, p. 4) this method is based on the microprojection of the optical images of the dyed fibers at a high magnification onto a variable slit behind which is mounted a special color filter and photocell. The degree of modification of the wool fibers is estimated after dyeing with either Kiton Red G or Indigo Carmine (a blue dye). TTD: 4-47

Wool friction measurements. Some measurements of friction of wool and mohair. A. J. P. Martin & R. Mittelmann. *J. Textile Inst. 37,* T269-80 (Dec. 1946).

In a study of a single variety of wool and one of mohair under a wide range of conditions, the frictional properties of single fibers are examined by means of an apparatus described. The coefficient of friction of wool and mohair decreases with increasing load and is positively correlated with the diameter of the fibers. TTD: 4-47

Yarn tester. Modification of Moscrop yarn tester. J. G. Martindale & B. Hogley. *J. Textile Inst. 37,* T281-4 (Dec. 1946).

An automatically operating Moscrop single thread tester is altered so as to reduce its carriage speed from 11 to 1 ft./min. Through a further modification the testing speed of 1 ft./min. was retained and the carriage speed increased to 14 ft./min. by means of a quick return motion over all other parts of the cycle. TTD: 4-47

Chemical analysis IX 2

Cellulose in pulp. Cellulose in pulp. Anon. *Paper Trade J. 123,* No. 25, 33-4 (Dec. 19, 1946).

A revision of TAPPI Official Standard T201M-45 has been approved as a standard by the Chemical Methods Committee. The procedure isolates the total cellulose in pulp by chlorinating. Since the method is empirical, the details of the procedure must be followed carefully. The results of the determination are called Cross and Bevan cellulose. TTD: 4-47

Cellulose in wood. Cellulose in wood. Anon. *Paper Trade J. 123,* No. 26, 47-8 (Dec. 26, 1946).

TAPPI Tentative Standard T17M-47 has been approved as a tentative standard by the Chemical Methods Committee. The total cellulose in wood is isolated by chlorination. The method is empirical, so details of the procedure must be followed carefully. The results of the determination are sometimes referred to as Cross and Bevan cellulose. TTD: 4-47

Corrosion testing. Corrosion testing. A. Wachter & R. S. Treseder, Shell Development Co. *Chem. Eng. Progress 43,* 315-26 (June, 1947).

An extensive discussion on corrosion testing is presented, including the preparation of samples, testing, and evaluation of results. TTD: 4-47

Fungicidal properties. Method for evaluating fungicidal properties of treated paper and paper board. B. F. Shema, Inst. of Paper Chemistry. *Paper Trade J. 123,* No. 23, 137-8 (Dec. 5, 1946).

The method is simple, requires little equipment, and no great skill. In many respects it is the same as that used in testing textiles. It was applied to 70 samples, includ-

ing papers and board impregnated with cellulose acetate and casein containing a disinfectant. *Aspergillus niger* was found to be more resistant than *Chaetomium globosum* to a Hg compound; with other substances, such as the chlorinated phenol, results were essentially the same for both organisms. TTD: 4-47

Perspiration in fabrics. Perspiration in fabrics. II. What do textile men know about it? Louis C. Barail, U. S. Testing Co., Inc. *Rayon Textile Monthly 28,* 93-7 (Feb. 1947).

Odor measurements of deodorants and anti-perspirants by the use of an osmometer are described. It is pointed out that while the action of perspiration on fabrics is a problem for textile manufacturers and users, it can be prevented since the causes of bacterial decomposition of perspiration are known. Semi-permanent germicide-fungicides, chosen for their lowest toxicity and for their effectiveness after a great number of washings, can be used. TTD: 4-47

TEXTILE MILLS X

Humidity measurements. New method of measuring relative humidity. Fred Lichtgarn. *Instruments 20,* 336-8 (Apr. 1947).

An accurate, sensitive means of measuring relative humidities over a wide range consists of a powdered metal and clay element in an electronic circuit. Precise requirements and general descriptions are given.
LCL TTD: 4-47

Instrumentation. Organizing an instrument department. C. S. Comstock & H. U. Fisher, Monsanto Chem. Co. *Chem. Eng. Progress 43,* 303-8 (June, 1947).

An instrument department should plan and erect the most efficient instrumentation of a plant and then maintain it. Research should be directed towards special problems and new methods.
LCL TTD: 4-47

Instrumentation. Industrial process control. J. G. Ziegler & N. B. Nichols, Taylor Instrument Cos. *Chem. Eng. Progress 43,* 309-14 (June, 1947).

Concepts of automatic control are discussed and illustrations of application presented.
LCL TTD: 4-47

Lighting. Importance of adequate lighting. Henry Miedendorp. *Rayon Textile Monthly 28,* 87-9 (Feb. 1947).

A brief general discussion in which it is pointed out that local ordinances are concerned with wiring from the standpoint of safety rather than from that of adequacy of light. TTD: 4-47

Machinery noise. Noise reduction in textile machinery due to substitution of gears by chain drives. Anon. *J. Textile Inst. 37,* P522-5 (Nov. 1946).

A lecture (by A. L. Mayor, Renold & Coventry Chain Co., Ltd.) is summarized. The conversion from gears to direct chain drives on sliver lap and ribbon lap machines, scutchers, cards, drawing frames, and others, and the resultant reduction in noise are considered.
TTD: 4-47

Process control. Automatic controls increase quality and production. Henry Miedendorp. *Rayon Textile Monthly 28,* 225-7 (Apr. 1947).

Instrumentation is eliminating rule-of-thumb in textile processing. Control of size cooking and storage, slashing, and dyeing, and smooth starting of motors for twisting, are briefly discussed. TTD: 4-47

Process water for rayon. Process water treatment for rayon manufacture. Lewis B. Miller, Univ. of Cincinnati. *Rayon Textile Monthly 28,* 153-7, 236-9 (Mar., Apr., 1947).

The quantity and quality of water, along with a tentative specification, are discussed. Types of water treatment considered include: water clarification for turbidity removal, softening, Fe and Mn removal, and color removal. The control of biological growth and the Zeolite process of water softening are briefly discussed. TTD: 4-47

Steam separators. Steam separators. E. J. Glinske, Cochrane Corp. *Rayon Textile Monthly 28,* 228 (Apr. 1947).

Line, receiver, and purifier separators are 3 types briefly discussed. TTD: 4-47

Stream pollution. Stream pollution control in Tennessee. R. P. Farrell, Dept. of Public Health (Tenn.). *J. Am. Water Works Assn. 39,* 352-6 (Apr. 1947).

The Tennessee Stream Pollution Control Board, established in 1945, is cooperating with industrial plants, municipalities, and with the TVA in studying control methods. Work has already been started on the Holston River Basin, which receives wastes from Bristol, Elizabethton, Kingsport and Johnson City. All the municipalities and industries in this area have started special studies or have employed engineers to do so. (There are some rayon plants in Elizabethton and Kingsport.)
TTD: 4-47

Textile machinery. Improved modern textile machinery. Henry Miedendorp. *Rayon Textile Monthly 28,* 149-52 (Mar. 1947).

A brief general survey of trends in machinery, including quillers, winders, twisters, beamers, and dobby looms.
HAM TTD: 4-47

Wastes. Industrial use of streams. L. L. Hedgepeth, Va. Water Control Board. *J. Am. Water Works Assn. 39,* 532-8 (June, 1947).

The waste load on Southern streams has been increased by the southward migration of industry and the increase in the population served by sewers. This has resulted in appropriate cooperative legislation in several states. The most profitable place to start correction is in the manufacturing process. Prohibitory regulation is undesirable, but legislation is needed to form the basis on which appropriate regulation can be constructed.

TTD: 4-47

ELECTRONIC CONTROL HANDBOOK. Ralph R. Batcher & Wm. Moulic. Caldwell-Clements, Inc., New York 17, N. Y.; 1946; 344 pp.; price $4.50.

Reviewed in *Chem. Eng. News 25,* 562-3 (Feb. 24, 1947). TTD: 4-47

TEXTILE WASTE RECLAMATION (WOOL, RAYON). British Intelligence Objectives Subcommittee Report No. 828; price 1s 1d.

Listed in Classified List No. 5 of Industrialists' Reports on Germany (Jan. 1947). TTD: 4-47

WATER TREATMENT AND PURIFICATION. Wm. J. Ryan. McGraw-Hill Book Co., Inc., New York 18, N. Y.; ed. 2; 1946; 279 pp.; price $2.75.

Reviewed in *Chem. Eng. News 25,* 196 (Jan. 20, 1947). TTD: 4-47

BASIC SCIENCES XI

Absorption. Absorption of water by fibers of cellophane and polyvinyl alcohol. E. Creutz & Robt. R. Wilson, Princeton Univ. *J. Chem. Physics 14,* 725-8 (Dec. 1946).

The rates of dehydration *in vacuo* and the rates of absorption of water vapor in air of known relative humidity were determined and were found to obey a diffusion equation. It is concluded that the diffusivity of water in cellophane and polyvinyl alcohol increases as the water content increases and that water is absorbed on the surface in layers 100 mols or more thick. The gain in weight when the foil is in equilibrium with air of various relative humidities increases faster than the relative humidity. This is in agreement with the hypothesis of Peirce (*J. Textile Inst.* (T) *20,* 133 (1929)).

TTD: 4-47

Acrylic esters. Preparation and polymerization of acrylic esters of olefinic alcohols. C. E. Rehberg & C. H. Fisher, Eastern Regional Research Laboratory. *J. Org. Chemistry 12,* 226-31 (Mar. 1947).

Acrylic esters, prepared by alcoholysis of methyl acrylate,

were polymerized to yield insoluble, cross-linked resins.

TTD: 4-47

Allyl starch. Preparation of allyl starch. E. A. Talley, *et al.,* Eastern Regional Research Laboratory. Bull. No. 140 of USDA Bur. of Agricultural & Industrial Chemistry (Feb. 1947).

Previously described methods for preparing allyl starch have been modified to reduce greatly the excess (600% or more) of allyl halide required. Allyl starch is soluble in organic solvents, and films obtained from these solutions become hard and insoluble upon exposure to air. GNR TTD: 4-47

Cellulose fermentation. Cellulose fermentation. Anon. *Chem. Eng. News 25,* 1687-8 (June 9, 1947).

A more economical method of fermenting cellulosic materials through anaerobic decomposition is being investigated. TTD: 4-47

High polymer structure. Study of high polymer structure by x-ray diffraction methods. C. W. Bunn, *J. Chem. Soc. 1947,* 297-306 (Feb. 1947).

Recent work on molecular configuration and the relations between physical properties, molecular flexibilities and stereochemical factors are reviewed. Crystalline polymers, produced by cooling, show a random arrangement of crystal aggregates. By drawing the polymer into a filament, knowledge of the mutual orientation of reflecting planes is obtained. The x-ray diffraction photographs of filaments of polyvinyl chloride, polyethylene adipate, polyisobutene and of polyhexamethylene adipamide (nylon 66) are given. The structures of polyhexamethyleneadipamide and polymethylene sebacamide are discussed and a structural formula given.

TTD: 4-47

High polymers. Phase separation in polymer solution. A. Dobry & F. Boyer-Kawenoki, Inst. de Biologie Physico-chimique (Paris). *J. Polymer Sci. 2,* 90-100 (Feb. 1947).

The phase separation in solutions of high polymers in the same solvent (technically known as incompatibility) has been studied for 14 high polymers (cellulose, vinyl, and acrylic derivatives) dissolved in 13 solvents. The influence of solvent, concentration, molecular weight (MW) and constitution of the macromolecules has been studied for 78 mixtures: the results are represented in triangular diagrams. Incompatibility appears to be the normal situation, compatibility the exception. Moreover, in certain cases the exception may be only apparent. Phase separation is discussed in its relation to osmotic pressure, solubility, and the isomorphism of the molecules. Phase separation furnishes new means—useful at least for technical research—of measuring the MW of macromolecules. TTD: 4-47

Infrared spectroscopy. Study of macromolecules by infrared spectroscopy. H. W. Thompson. *J. Chem. Soc. 1947,* 289-97 (Feb. 1947).

Recent progress with complicated mols was made possible by the development of recording spectrometers, improved techniques in handling solid films and insoluble powders, and more theoretical knowledge of the correlation of vibration bands with particular types of vibration of the different nuclear skeletons. An alteration in the mode of packing fibrous mols might be expected to affect the vibrational spectrum. With mols capable of molecular orientation in the solid state, such as nylon, polythene, and polyvinylidine chloride, there should be a change in the relative intensities of bands if the sample is examined in plane-polarized radiation with the direction of orientation of the chains successively parallel and perpendicular to the plane of polarization (*Proc. Roy. Soc. 184,* A, 3 (1945)). This effect has been examined with oriented polyethylene and nylon, and small changes in the intensities of bands have been found.
TTD: 4-47

Internal plasticization. Internal platsticization: effect of chemical structure. V. L. Simril, E. I. du Pont de Nemours & Co. *J. Polymer Sci. 2,* 142-56 (Apr. 1947).

The elastic and plastic properties of high polymeric materials are functions of the forces holding the molecules together and the ability of small segments of the chains to move about, relative to other segments. Internal plasticization is accomplished by introducing structural features which reduce intermolecular and intramolecular forces and which, in general, decrease the order of the polymer. Physical techniques used to determine the effect of such structural features have been discussed. The results of numerous investigations into the relations between structure and properties have been considered in an attempt to present a simple and consistent physical picture of these relations. TTD: 4-47

Molecular heterogeneity of nitrocellulose. Molecular properties of nitrocellulose. II. Robt. H. Blaker, Richard M. Badger & Richard M. Noyes, Calif. Inst. of Technology. *J. Phys. Colloid Chemistry 51,* 574-9 (Mar. 1947).

The absolute value of the Staudinger constant for nitrocellulose in acetone is determined by osmotic pressure and viscosity measurements and by the use of data previously reported in the literature. Measurements of number-average and weight-average molecular weights on 6 commercial nitrocelluloses indicate that materials prepared from wood pulp are distinctly more heterogeneous molecularly than those prepared from cotton linters.
TTD: 4-47

Molecular weights of nylon. Distribution of molecular weights of nylon as determined by fractionation in a phenol-water system. Guy B. Taylor, E. I. du Pont de Nemours & Co. *J. Am. Chem. Soc. 69,* 638-44 (Mar. 1947).

Polyhexamethyleneadipamide has been fractionated into 46 cuts in a phenol-water 2-liquid-phase system at 70°. The molecular weight distribution has been found to follow that predicted by the Flory equation based on the premise that in bifunctional reactions to form linear polymers, the activity of a functional group is independent of the length of polymer chain to which it is attached.
TTD: 4-47

Nitrate esters. Reductive acetolysis of nitrate esters. D. O. Hoffman, R. S. Bower & M. L. Wolfrom, Ohio State Univ. *J. Am. Chem. Soc. 69,* 249-50 (Feb. 1947).

A method is described by which a nitrate ester may be denitrated and acetylated by reducing a solution of the nitrate in acetic anhydride with Zn and a suitable promoter. A high-viscosity cellulose nitrate containing 13% N, when subjected to this procedure, yielded cellulose acetate in the form of an amorphous powder; but the product was highly degraded. The procedure may prove useful in experiments involving subsequent hydrolysis. TTD: 4-47

Non-ionic detergents. Cryoscopic evidence for micellar association in aqueous solutions of non-ionic detergents. Emanuel Gonick & Jas. W. McBain, Stanford Univ. *J. Am. Chem. Soc. 69,* 334-6 (Feb. 1947).

Measurements of freezing-point lowerings of aqueous solutions of 3 non-ionic detergents of the polyethylene oxide-hydrocarbon type show that these compounds form colloidal electrolytes except for the absence of ionization. The addition of KCl to a solution of nonaethylene glycol (mono) laurate caused no significant change in the degree of association of the detergent. TTD: 4-47

Nylon solutions. Relation of viscosity of nylon solutions in formic acid to molecular weight as determined by end-group measurements. Guy B. Taylor, E. I. du Pont de Nemours & Co. *J. Am. Chem. Soc. 69,* 635-8 (Mar. 1947).

Measurements of the intrinsic viscosity and functional end-groups of polymer chains for 25 different nylon samples have been made and the relation between the viscosity and molecular weight reduced to the formula $\overline{M}_n = 13{,}000\ (\eta)^{1.39}$. Molecular weights, number averages, ranged from 5 to 25 thousand depending on extent of reaction which was controlled by employing an excess of a functional group and on the conditions of

preparation. It is concluded that the ratio of viscosity-average to number-average is nearly a constant for all the samples. TTD: 4-47

Plant cell walls. The submicroscopic structure of plant cell walls. Otto Treitel, Univ. of Pennsylvania. *J. Colloid Sci. 2,* 237-46 (Apr. 1947).

The liquid air technique of L. Hock (*Elektrochem. Z. 31,* 404 (1925)) was applied to the petioles of *Nymphaea* and the woody branches of *Salix babylonica.* The petioles, when frozen in liquid air and struck with a hammer, broke into irregular particles, whereas the woody branches of *S. babylonica* formed linear particles, parallel to the axis of the branch. It is concluded that the submicroscopic structure of the average secondary cell walls of petioles of *Nymphea* consists mainly of amorphous cellulose, whereas the cell walls of the woody branches of *S. babylonica* consist mainly of micellar cellulose. TTD: 4-47

Polymer structure. Chain structure of vinyl and diene polymers in relation to polymerization mechanism. Paul J. Flory, Goodyear Tire & Rubber Co., Inc. *J. Polymer Sci., 2,* 36-40 (Feb. 1947).

The usual occurrence of structural units of vinyl polymers in head-to-tail sequence is attributed to the stabilization of the free radical of the growing polymer chain by the monomer substituent (s). Addition at the unsubstituted carbon of the vinyl group reproduces a free radical of lower energy than does addition at the substituted carbon. In at least one instance (vinyl acetate polymerization) a very small percentage of head-to-head addition takes place in spite of this energy difference. These ideas can be extended to polymers of dienes. Here the problem is complicated by the simultaneous occurrence of 1,2 (or 3,4) addition as well as 1,4 addition. In the case of an unsymmetrical diene monomer such as isoprene it is possible, from detailed examination of the structure of the polymer, to distinguish between preferred addition at carbon atoms 1 and 4 of the monomer. TTD: 4-47

Polymers. Viscometric investigation of dimethyl siloxane polymers. Arthur J. Barry, Dow Chem. Co. *J. Applied Physics 17,* 1020-4 (Dec. 1946).

The intrinsic viscosities of an extended series of linear methyl polysilane fluids, having dimethylsiloxane as the repeating unit, have been diluted in toluene solution. These values have been correlated with their molecular weights determined chemically, by osmotic pressure, and by light scattering measurements. TTD: 4-47

Polymers. Association of polymer molecules in dilute solution. Paul Doty, Herman Wagner & Seymour Singer. Polytechnic Inst. of Brooklyn. *J. Phys. & Colloid Chemistry 51,* 32-57 (Jan. 1947).

The association of polyvinyl chloride mols in dilute dioxane solution was studied by means of osmotic-pressure, light-scattering, and ultracentrifugal methods. The association persists in butanone solution and is characterized by a rapid partial dissociation upon heating and a slow (diffusion controlled) return to equilibrium association after cooling. Dissymmetry, depolarization and viscosity measurements indicate that the mol clusters are composed of many mols, but are much more densely packed, so that the size of the cluster and of the individual mol are of the same order of magnitude. Some of the requirements of the binding forces are discussed. Qualitative experiments indicate that cluster formation occurs in varying degrees in other polymer-solvent systems, especially near the phase-separation regions. Association in polyvinyl chloride-acetate copolymers and in cellulose acetate is described, and the significance of this evidence in relation to fractionation procedure is mentioned. TTD: 4-47

Polymers. Molecular size distribution in 3-dimensional polymers. V. Post-gelation relationships. Paul J. Flory, Goodyear Tire & Rubber Co., Inc. *J. Am. Chem. Soc. 69,* 30-5 (Jan. 1947).

The constitution of randomly cross-linked polymers containing a sufficient concentration of cross linkages to produce a gel fraction has been treated statistically by a method which avoids the use of molecular size distribution equations. The treatment is sufficiently general to cover any distribution of primary polymer chain lengths. TTD: 4-47

Polyvinyl acetates. Intrinsic viscosities and molecular weights of polyvinyl acetates. R. H. Wagner, Kodak Research Laboratories. *J. Polymer Sci. 2,* 21-35 (Feb. 1947).

A polyvinyl acetate polymer of medium viscosity was fractionated into 16 fractions and 3 of the larger of these further fractions separated into 20 subfractions. The intrinsic viscosity and the osmotic pressure molecular weights (MW) were determined at 25°C. The data indicate that little, if any, increase in homogeneity is to be expected by further successive fractionations. An equation applicable to fractionated and unfractionated vinyl acetate polymers is described that is useful in obtaining the intrinsic viscosity from a single viscosity measurement. From studies of unfractionated material from different sources calculated ratios of viscosity-average to number-average MW indicate that the degree of heterogeneity of chain-length distribution increases with increasing average MW. TTD: 4-47

Radioactive tracers. Radioisotopes; new tools for science. Chas. A. Thomas, Monsanto Chemical Co. *Chem. Eng. News 25,* 1572-4 (June 2, 1947).

Radioactive tracers are being investigated as a means of studying the distribution of lubricants on rayon fibers for the purpose of evaluating the functioning of the lubricant in subsequent spinning and drying operations.
TTD: 4-47

Saponin surface measurements. Some rheological measurements on surface of saponin in water. John R. Van Wazer, Eastman Kodak Co. *J. Colloid Sci. 2,* 223-36 (Apr. 1947).

By the use of new experimental techniques, values have been found for the shear modulus, Young's modulus, and the yield point of the adsorbed layer of solute on dilute aqueous solutions of saponin. The viscosity studies were made in a rotational viscometer devised so that the flow properties of the surface alone could be obtained by extrapolation. TTD: 4-47

Sodium carboxymethylcellulose. Determination of degree of substitution of sodium carboxymethylcellulose. R. W. Eyler, E. D. Klug & Floyd Diephius, Hercules Powder Co. *Anal. Chemistry 19,* 24-7 (Jan. 1947).

The degree of substitution of sodium carboxymethylcellulose may be determined by 3 methods. (1) The sodium salt is converted to the acid form by shaking with methanal acidified with HCl or HNO_3, the excess acid is washed out, and the carboxyl content of the dry free acid determined by adding excess standard NaOH and back-titrating with standard HCl. (2) The sodium salt is dissolved in water containing a small excess of standard NaOH and titrated conductometrically with standard HCl. (3) The sample is dissolved in NaOH, acidified with H_2SO_4, heated under reflux to yield glycollic acid and the glycollic acid determined colorimetrically by means of 2.7-dihydroxynaphthalene.
LGO TTD: 4-47

Sorption of water vapor. Free energy, heat, and entropy or sorption of water vapor by proteins and high polymers. Malcolm Dole & A. D. McLaren, Northwestern Univ. & E. I. du Pont de Nemours & Co. *J. Am. Chem. Soc. 69,* 651-7 (Mar. 1947).

Data of H. B. Bull on the amount of water sorbed by proteins and nylon are recalculated. Differential and integral free energies and heats of hydration are graphed or tabulated for 5 polymers, cellophane, cellulose acetate, polyvinyl alcohol, polyvinyl butyral, and vinylidene chloride-acrylonitrile copolymer. TTD: 4-47

Sorption of water vapor. Sorption of water vapor by high polymers. Sherman E. Smith, Univ. of New Mexico. *J. Am. Chem. Soc. 69,* 646-51 (Mar. 1947).

A method for the graphic analysis of data on the sorption of water vapor by high polymers is presented. It is shown that hysteresis in the sorption isotherm is the consequence of variation of a fraction of bound water present in the adsorption and desorption processes, the bound fraction being always larger on desorption than on adsorption. A mechanism for the development of hysteresis is suggested. TTD: 4-47

Viscosity of nitrocellulose. Molecular properties of nitrocellulose. I. Geo. J. Doyle, Garman Harbottle, Richard M. Badger & Richard M. Noyes, Calif. Inst. of Technology. *J. Phys. & Colloid Chemistry 51,* 569-74 (Mar. 1947).

Results of viscosity measurements on dilute solutions of several nitrocelluloses in acetone and in butyl acetate can be expressed by an equation of the form

$$\eta_{rel} = 1 + [\eta]c \times 10^{k[\eta]c}$$

in which η_{rel} is the relative viscosity of the solution, $[\eta]$ is the intrinsic viscosity of the solute, and c is the concentration in grams per 100 ml. The constant k is close to 0.2 for both acetone and butyl acetate and appears to vary for different preparations of the solvent. The ratio of the intrinsic viscosities in butyl acetate and in acetone is about 1.40: 1 for nitrocelluloses having intrinsic viscosities greater than about 1, but the value of the ratio appears to fall off for low-viscosity nitrocelluloses.
TTD: 4-47

Properties of cellulose. Investigation of properties of cellulose oxidized by nitrogen dioxide. II. Evolution of carbon dioxide from ionic acids and polyuronides. E. W. Taylor, W. F. Fowler, Jr., P. A. McGee & W. O. Kenyon, Kodak Research Laboratories. *J. Am. Chem. Soc. 69,* 342-7 (Feb. 1947).

Kinetic data on the evolution of CO_2 from celluronic acids is submitted as evidence that cellulose, highly oxidized with nitrogen dioxide, is composed essentially of β-D-glucuronic acid units and unchanged D-glucose units. Reaction velocity constants are given for evolution of CO_2 from D-glucuronic acid, D-gelacturonic acid, L-ascorbic acid, pectic acid, alginic acid, celluronic acids and oxidized starch. The close relationship existing between the rates of acid decomposition of monomeric and corresponding anhydro-polymeric acids is discussed. With the exception of L-ascorbic acid, the nonuronic organic acids tested as reference compounds evolved small amounts of CO_2 linearly. TTD: 4-47

Properties of cellulose. Investigation of properties of cellulose oxidized by nitrogen dioxide. III. Reaction of carboxyl groups of polyuronides with calcium acetate. P. A. McGee, W. F. Fowler, Jr. & W. O. Kenyon, Kodak Research Laboratories. *J. Am. Chem. Soc. 69,* 347-9 (Feb. 1947).

The calcium acetate method of carboxyl analysis did not

produce theoretical values for celluronic acid or other synthetic or natural polyuronides examined. Finely divided samples of celluronic acids may be titrated with precision, using calcium acetate immediately after the reactants are combined. Inter- or intramolecular dehydration could account for the difference between carboxyl content as found by calcium acetate determination and the CO_2 evolution method. TTD: 4-47

Properties of cellulose. Investigation of properties of cellulose oxidized by nitrogen dioxide. IV. Potentiometric titration of polyuronides. C. C. Unruh, P. A. McGee, W. F. Fowler, Jr. & W. O. Kenyon, Kodak Research Laboratories. *J. Am. Chem. Soc. 69,* 349-54 (Feb. 1947).

Macro- and microtitrations for carboxyl of celluronic acid, oxidized starch, and other polyuronides in presence of 1 *N* sodium bromide are shown to represent a rapid, convenient method for characterizing these substances. Both celluronic acids and oxidized starch are insoluble in water, in contrast to alginic acid when neutralized with alkali hydroxide to the equivalence point and a cross-linking reaction(s) possibly involved in their preparation is postulated to explain this observation. Good agreement is obtained between the carboxyl values found by potentiometric titration in presence of sodium bromide and those resulting from the calcium acetate method for a variety of polymeric and monomeric substances containing uronic acid groups. TTD: 4-47

Properties of cellulose. Investigation of properties of cellulose oxidized by nitrogen dioxide. V. Study of mechanism of oxidation in presence of carbon tetrachloride. P. A. McGee, W. F. Fowler, Jr., E. W. Taylor, C. C. Unruh & W. O. Kenyon, Kodak Research Laboratories. *J. Am. Chem. Soc. 69,* 355-61 (Feb. 1947).

The rate of oxidation of cellulose with nitrogen tetroxide dissolved in CCl_4 was studied. It appears evident that the cellulose first partially nitrates and then denitrates in the course of the oxidation. This mechanism of oxidation may underlie many of the oxidations of organic compounds containing the OH radical, using HNO_3 as the oxidant. TTD: 4-47

Vinyl polymers. New method of preparing substituted vinyl compounds. Depolymerization studies on vinyl polymers. G. Bryant Bachman, *et al.,* Purdue Research Foundation & Purdue Univ. *J. Org. Chemistry 12,* 108-21 (Jan. 1947).

A new method has been developed for synthesizing substituted vinyl compounds which consists in altering polymers chemically and then depolymerizing them. The method has been applied especially satisfactorily to the preparation of halogenated styrenes. An extensive study

of the depolymerization of polyvinyl compounds has been made and factors influencing yields of monomers have been determined. TTD: 4-47

Viscometer. Recording viscometer for starches. C. C. Kesler, Penick & Ford Ltd., Inc., & W. G. Bechtel. Corn Industries Research Foundation. *Anal. Chemistry 19,* 16-21 (Jan. 1947).

Viscosity is measured as the force which the starch paste exerts against a propeller driven through it at constant speed. Provision is made for measurements in various viscosity ranges without recalibration. The rate of heating, maximum temperature, rate of stirring and loss of water by evaporation during the preparation of the starch paste are carefully controlled to give precise results. Characteristic curves for different types of starches are included.

LGO TTD: 4-47

Viscometer. Capillary-type viscometer. David P. Shoemaker, Earl Hoerger, Richard M. Noyes & Robt. H. Blaker, Calif. Inst. of Technology. *Anal. Chemistry 19,* 131-2 (Feb. 1947).

A modified capillary-type viscometer designed for solutions containing volatile solvents is described. The sample is dissolved in a glass vial and viscosity measurements made without transferring the solution, thereby eliminating errors arising from changes in concentration due to volatilization of the solvent. The viscosities of solutions of a number of nitrocelluloses determined with the viscometer are given.

LGO TTD: 4-47

Viscometer. Autographic Couette viscometer. R. H. K. Thomson & A. Johnston, Imperial Chemical Industries, Ltd. *J. Sci. Instruments 24,* 81 (Mar. 1947).

A viscometer, designed to plot viscosity against time at constant average rate of shear within this viscosity-time range, which is of use in developing a method of making textile fibers from vegetable protein solutions, is described and illustrated. TTD: 4-47

Keratin solutions. Bernard Lustig & Albert A. Kondritzer (to Lawrence R. Bruce, Inc.). USP 2 413 983, Jan. 7, 1947.

It was found that, when certain acid groups are introduced into the keratin mol, the product will form a stable solution. When dissolved with the aid of thioglycollic acid or sulfides, the solution will remain stable even after the solubilizing agent is removed. The keratin may then be precipitated by acidifying to pH 5 or lower, and this precipitate may be easily redissolved without degradation by the use of weak alkali in the pH range 8-9. The advantages of this method over the prior art

are: the increased solubility of the keratin in solubilizing agents at pH below 11, which decreases the amount of permanent degradation, and the increased solubility of the end product, the solubilized keratin, in reagents of pH 5-8. TTD: 4-47

Protein isolation. Sherbourne B. Henning. USP 2 415 426, Feb. 11, 1947.

In the isolation of soybean proteins or the like, the beans are generally flaked before the oil is extracted. The defatted flakes are then treated with acid water to remove the soluble sugars, legumin and proteose. The proteins are next dissolved with alkali and the insoluble impurities are separated from the alkaline solution of the proteins. Difficulty has been encountered in such efforts to separate the insoluble impurities from the alkaline solutions. The addition of an acetate, preferably sodium acetate, to the alkali used for dissolving the proteins, causes the gummy and mucilaginous impurities which are held in suspension to flock or agglomerate quite rapidly into large flocks or agglomerates which settle promptly to the bottom of the vat, allowing the clear solution of the proteins to be decanted off or syphoned off and transferred to an adjoining vat for later precipitation with acid. Heating the liquid to approximately 130°F increases the agglomeration. The resulting supernatant solution of proteins is quite clear. TTD: 4-47

Cellulose pulp viscosity. S. M. Edelstein. Brit. P. 577 562. *Textile Mfr. 72,* 551 (Oct. 1946).

The viscosity of cellulose pulp is lowered by mixing with a dilute solution of H_2O_2 and then heating the mixture in contact with a metal such as Fe, Cu, Al, and Mn. In an example 0.25 lb. $MnSO_4$, 4 lb. H_2O_2, and 100 lb. bleached cotton linters are added to 150 gallons of water (heated to 212°F) and the mass stirred for 1 1/2 hrs. After decanting, squeezing through rollers and drying, the viscosity of the cellulose is found to be lowered to 2500 centipoises (from 50,000). TTD: 4-47

CHARACTERIZATION OF ORGANIC COMPOUNDS. Saml. M. McElvain. Macmillan Co., New York; 282 pp.; price $3.75.

Reviewed in *Can. Textile J. 63,* No. 20, 14, 16 (Oct. 4, 1946). TTD: 4-47

CHEMICAL CRYSTALLOGRAPHY: INTRODUCTION OF OPTICAL AND X-RAY METHODS. C. W. Bunn. Clarendon Press; 1945; 422 pp.; price $7.50.

Reviewed in *Am. Dyestuff Reptr. 35,* 483 (Oct. 7, 1946). TTD: 4-47

COLLOIDS, THEIR PROPERTIES AND APPLICATIONS. A. G. Ward. Interscience Publishers, Inc., 215 4th Ave., New York 3, N. Y.; 1946; 133 pp.; price $1.75.

Reviewed in *Chem. Eng. News 24,* 3416 (Dec. 25, 1946). TTD: 4-47

ENCYCLOPEDIA OF HYDROCARBON COMPOUNDS—I. Jos. E. Faraday, Editor. Chemical Publishing Co., Brooklyn, N. Y.; looseleaf; 1946; price $15.00.

Reviewed in *Am. Dyestuff Reptr. 35,* 483 (Oct. 7, 1946). TTD: 4-47

ESSAYS IN RHEOLOGY. Sir Isaac Pitman & Sons, Ltd., London, England; 111 pp.; price 12s 6d net.

Reviewed in *J. Sci. Instruments 24,* 138 (May, 1947). TTD: 4-47

MECHANISMS OF REACTIONS AT CARBON-CARBON DOUBLE BONDS. Chas. C. Price. Interscience Publishers, Inc., New York; 1946; 128 pp.; price $2.50.

Reviewed in *J. Polymer Sci. 2,* 255-6 (Apr. 1947). TTD: 4-47

MICROCALORIMETRY. W. Swietoslawsky. Reinhold Publishing Corp.; 1946; 199 pp.; price $4.75.

Reviewed in *Rayon Textile Monthly 28,* 57 (Jan. 1947). TTD: 4-47

SCIENTIFIC INSTRUMENTS. Herbert J. Cooper, Chemical Publishing Co., 1946; price $6.00.

Reviewed in *J. Phys. & Colloid Chemistry 51,* 365 (Jan. 1947). TTD: 4-47

THEORY OF ORGANIC CHEMISTRY. Gerald E. K. Branch & Melvin Calvin. Prentice-Hall, Inc., New York; 523 pp.

Reviewed in *Can. Textile J. 63,* No. 22, 14 (Nov. 1, 1946). TTD: 4-47

TEXTILE RESEARCH XII

Canadian textile research. Principles of cooperative textile research in Canada. Anon. *Can. Textile J. 63,* No. 20, 27-8, 30 (Oct. 4, 1946).

A report on a textile research program for Canada is summarized. TTD: 4-47

Canadian textile research. Textile research program for Canada. A. C. Goodings, Ontario Research Foundation. *Can Textile J. 63,* No. 20, 39-41, 45-6 (Oct. 4, 1946).

An address before the Federation of Textile Technical Associations (Canada). TTD: 4-47

Construction costs. Process equipment cost estimation. Anon. *Chem. Eng. 54,* No. 5, 107-38 (May, 1947).

A preliminary report on estimating building and equipment costs covers a range of construction types and various items of chemical engineering equipment.
LCL TTD: 4-47

Developments in textiles. Chemical developments in textiles in 1946. Milton Harris & Louise L. Cox, Milton Harris Associates. *Chem. Eng. News 25,* 96-7 (Jan. 13, 1947).

A brief review. TTD: 4-47

Indian textile industry. Reorganization of Indian textile industry. Anon. *Indian Textile J. 57,* 43-5 (Oct. 1946).

A plan generally to reorganize the textile industry of India, as outlined by a mill owner, is given in 33 detailed suggestions, among which are: have only a few standardized counts with no variation in quality, restrict a mill to 2 counts, which it might choose, print fast colors only (*i.e.,* no *kacha* colors), etc. TTD: 4-47

Japanese textile industry. Japan's textile rehabilitation. F. S. Winterbottom, Leonard Plews, Stockdale & Co., Ltd. *Textile Recorder 64,* No. 763, 36-41, 58 (Oct. 1946).

A general survey made by the British member of the U. S. Army mission to Japan is presented. Total number of Japanese spindles is thought to be somewhat less than 3,500,000, and it is noted that the Japanese industry is a potential competitor of the British. TTD: 4-47

Research. Economics of research. Ralph Presgrave, York Knitting Mills, Ltd. *Can. Textile J. 63,* No. 22, 44-5, 48 (Nov. 1, 1946).

Industrial research is economically justified in its contribution to the betterment of man. TTD: 4-47

Research laboratories. Four USDA laboratories work on new synthetics. Anon. *Textile World 96,* No. 9, 118-20 (Sept. 1946).

The experiments of the 4 Regional Research Laboratories are very briefly discussed and illustrated: the Northern is engaged principally in work on zein fiber, the Eastern on casein, the Southern on peanut, and the Western on various proteins. TTD: 4-47

Textile advances. Bur. of Agricultural and Industrial Chemistry Report. Anon. *Chem. Eng. News 25,* 1114 (Apr. 21, 1947).

In a summary of the more significant efforts of the bureau are briefly noted: the development of Sarelon (from peanut protein) and a zein fiber (from corn protein), also flameproofing compositions. TTD: 4-47

Textile chemistry. Textile chemistry in 1946. Julian F. Smith, Office of Naval Research. *Record Chem. Progress 8,* 45-7 (Jan.-Apr. 1947).

Developments in rayon technology, synthetic fibers, bleaching, dyeing, finishing, proofing, and research are briefly reviewed. TTD: 4-47

Textile education. Textile education conference. Anon. *Textile Recorder 64,* No. 763, 45-53, No. 764, 58, 61-2, 65, 67; *Textile Mfr. 72,* 501-4, 506, 545 (Oct. 1946).

The rôle of education and training in the cotton and rayon textile industries is discussed in a series of papers read at the 4-day conference of the Cotton Board's Recruitment and Training Dept. in Manchester, England. TTD: 4-47

Textile research. OTS reports. Anon. *Chem. Eng. News 25,* 254 (Jan. 27, 1947).

Reports on textile printing, dyeing, and rayon staple fiber production in Germany available, at indicated prices, from the Office of Technical Services, are briefly noted. TTD: 4-47

Textile research. OTS Reports. Anon. *Chem. Eng. News 25,* 1464 (May 19, 1947).

Reports on tropical deterioration and fungicide compounds in mildewproofed materials available, at indicated prices, from the Office of Technical Services, are briefly noted. TTD: 4-47

Textile research. Fundamentals of textile research. Edw. R. Schwarz, Mass. Inst. of Technology. *Can. Textile J. 63,* No. 21, 44-5 (Oct. 18, 1946).

An applied research program is necessary to every mill in order to assure consumer satisfaction. Such a program must be based upon fundamental research, to be carried out in educational institutions largely. TTD: 4-47

Textile standards. People, things, and words. A. G. Ashcroft, Alexander Smith & Son Carpet Co. *ASTM Bull.* No. 145, 54-8 (Mar. 1947); *Rayon Textile Monthly 28,* 187-90, 259-62 (Apr., May, 1947).

Standard terminology is viewed as necessary in textile research in interpreting the desires of consumers and analyzing the problem of their needs. Laboratory tests which may be correlated with field and service data are considered to be much needed. TTD: 4-47

CALLAWAY TEXTILE DICTIONARY. W. L. Carmichael, Geo. E. Linton & Isaac Price, Callaway Mills, LaGrange, Ga.; 1947; 392 pp.; price $4.00. TTD: 4-47

GERMAN FURNISHING FABRIC INDUSTRY. Brit. Intelligence Objectives Subcommittee, Report No. 652; price 5s 2d. TTD: 4-47

GENERAL INVESTIGATION OF SEWING THREAD INDUSTRY IN GERMANY, INCLUDING MACHINERY, PROCESSES, AND PRODUCTION METHODS. British Intelligence Objectives Subcommittee Report No. 947; price 2s 8d.

Listed in Classified List No. 4 of Industrialists' Reports on Germany (Dec. 1946). TTD: 4-47

GERMAN TEXTILE INDUSTRY. Brit. Intelligence Objectives Subcommittee Report No. 514; price 6s 2d.

Listed in Classified List No. 6 of Industrialists' Reports on Germany (Feb. 1947). TTD: 4-47

GERMAN UMBRELLA CLOTH INDUSTRY: WEAVING, YARN DYEING, WATERPROOFING, AND FINISHING. British Intelligence Objectives Subcommittee Report No. 799; price 2s 8d.

Listed in Classified List No. 4 of Industrialists' Reports on Germany (Dec. 1946). TTD: 4-47

STAATLICHE TECHNICUM (FACHSCHULE) FÜR TEXTIL INDUSTRIE (State Technical School for Textile Industry) and DEUTSCHER FORSCHUNGS INSTITUT FÜR TEXTIL INDUSTRIE (Textile School and Testing Institute). British Intelligence Objectives Subcommittee E/R Report No. 192; price 3d.

Listed in Classified List No. 4 of Industrialists' Reports on Germany (Dec. 1946). TTD: 4-47